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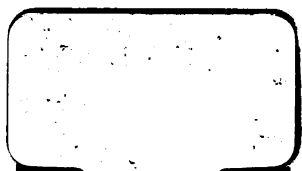
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1. The first part of the document is a letter from the President of the United States to the Congress, dated January 3, 1862. It is a very important document, as it contains the President's views on the state of the Union and the progress of the war. It is a very long letter, and it is written in a very formal style. It is a very important document, as it contains the President's views on the state of the Union and the progress of the war.

2. The second part of the document is a letter from the Secretary of the War Department to the President, dated January 3, 1862. It is a very important document, as it contains the Secretary's views on the state of the war and the progress of the military. It is a very long letter, and it is written in a very formal style. It is a very important document, as it contains the Secretary's views on the state of the war and the progress of the military.

3. The third part of the document is a letter from the Secretary of the Navy to the President, dated January 3, 1862. It is a very important document, as it contains the Secretary's views on the state of the navy and the progress of the naval war. It is a very long letter, and it is written in a very formal style. It is a very important document, as it contains the Secretary's views on the state of the navy and the progress of the naval war.

4. The fourth part of the document is a letter from the Secretary of the Treasury to the President, dated January 3, 1862. It is a very important document, as it contains the Secretary's views on the state of the treasury and the progress of the financial war. It is a very long letter, and it is written in a very formal style. It is a very important document, as it contains the Secretary's views on the state of the treasury and the progress of the financial war.



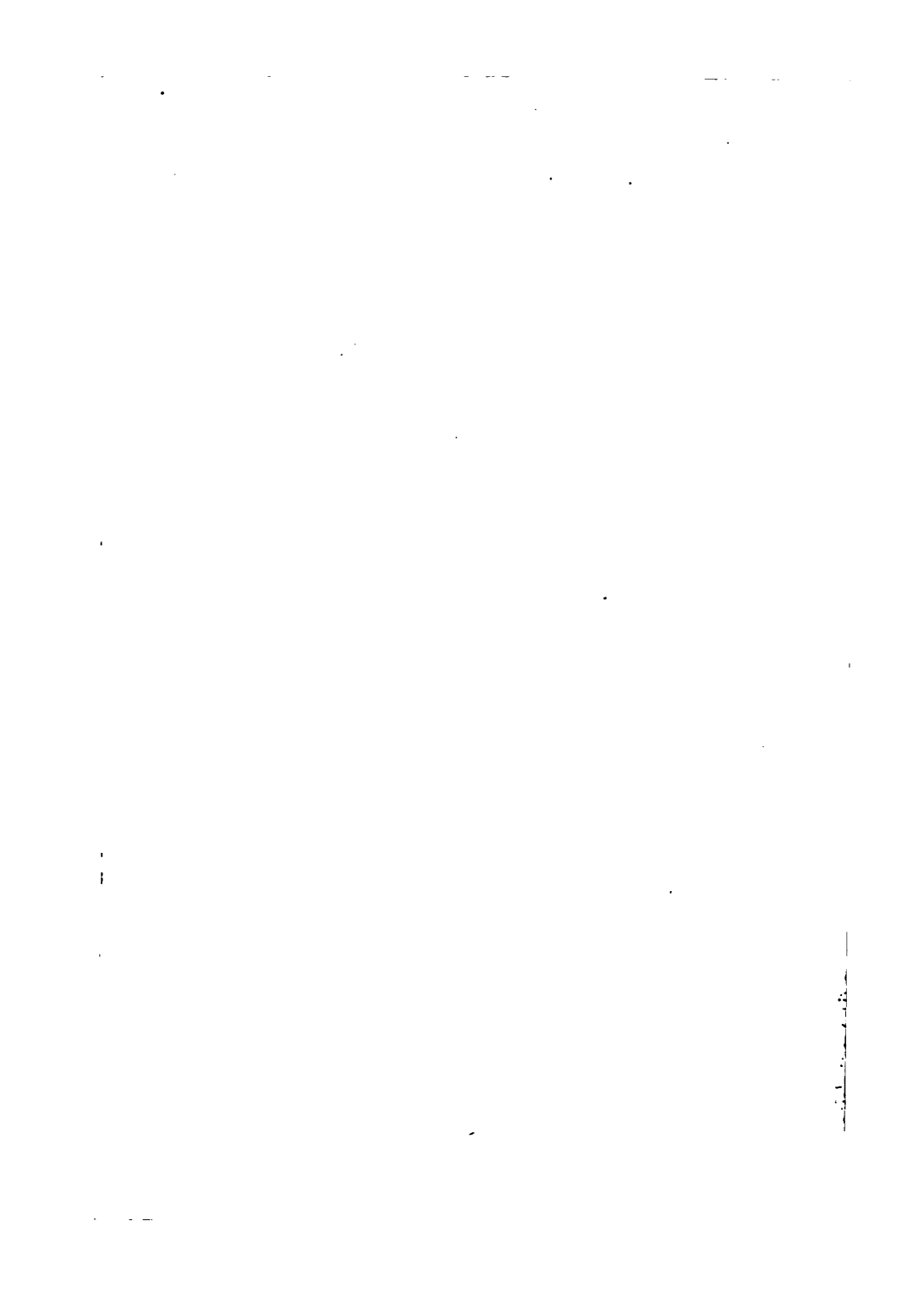
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John & W. Briggs Esqrs

VETERINARIAN'S VADE MECUM.

THE  
VETERINARIAN'S VADE MECUM.

BY  
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SURGEONS, OF THE BOSTON VETERINARY MEDICAL ASSOCIATION,  
ETC., ETC.

WITH NUMEROUS ILLUSTRATIONS.

EDINBURGH: SUTHERLAND AND KNOX.  
LONDON: SIMPKIN, MARSHALL, AND CO.

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## PREFACE.

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I NEED not dilate much on the contents of the following pages, beyond stating their plan of arrangement.

Part I., devoted to the VETERINARY PHARMACOPŒIA, is written on the much approved plan of the Physician's Prescriber's Pharmacopœia. I should have ventured a new classification, but did not consider it of great importance in a practical point of view, and therefore adhered to one already accepted. I availed myself of a suggestion in Geffcken's Pharmacopœia Veterinaria Germanica, and for the sake of brevity, classified the domestic animals under three heads—*a*, *b*, *c*,—thus avoiding unnecessary repetition in mentioning the doses of medicines. The horse and ox are represented by *a*; sheep, goat, and pig, by *b*; dog and cat, by *c*. In numerous instances, however, when the doses differ much between different animals of the classes formed, the animals are separately named.

Part II., FORMULARIUM VETERINARIUM, contains a large number of prescriptions to suit many tastes, and to answer many purposes; but its object principally has been to show young practitioners how medicines should be combined. Each formula is printed in Latin and English, for those who do not possess the advantage of even an elementary knowledge of Latin. Let it be distinctly understood that the formulary is not a collection of specifics or nostrums, each suited for a specific purpose. Their employment in the treatment of disease calls for knowledge alone possessed by the educated Veterinarian.

Part III., MEMORANDA TOXICOLOGICA. This division of the book has been prepared on a scale somewhat more extended than the others. I have drawn largely from the works of Orfila, Magendie, Taylor, Christison, Tabourin, Hertwig, and others. Much valuable matter has been obtained from the elaborate article on Vegetable Poisons by Professor Weiss, of the Stuttgart Veterinary School and published in the *Repertorium der Thierheilkunde* for 1851.

Part IV., MEMORANDA THERAPEUTICA. This section contains a List of the Diseases of the Domestic Animals in alphabetical order. The list is far more complete than in other British Veterinary works; and I have endeavoured to render it so by consulting many authorities, British and

Continental. The practical injunctions are practically those I follow and approve of, though necessarily the matter is not altogether original. I have consulted my case books, as well as the works of others, and have been careful to maintain under each head an order of succession in the remedies suggested corresponding with the method of employment in treating disease. The numbers refer to the prescriptions; but I repeat, the prescriptions are not sufficiently numerous to serve every purpose, and those referred to in the Therapeutic Remembrancer are merely suggestive, and not indispensable forms.

In the next place, I have to say, that but for innumerable occupations this little work would have appeared a year ago. I have thus had time to judge of its imperfections; but have become more and more convinced that such a manual would prove serviceable to my professional brethren; and having read, re-read, and corrected, so as to embody as much of the 'whole truth' as I could in the following pages in the manner at first suggested, I now crave the indulgence and impartial consideration of those who may have occasion to refer to it. They might have more; but as regards quantity, it was difficult to decide how little or how much should be found in a Veterinarian's Vade Mecum.

In conclusion, I cannot refrain from thanking my friend Mr James Gardner, of George Street, Edinburgh, who, as a Pharmaceutist, has devoted much of his long life to the



preparation and dispensing of Veterinary Medicines. Mr Gardner revised the proofs of the first and second parts, and offered me many valuable suggestions. Other friends have assisted me in a similar manner, and more especially Dr Monastier, of the Edinburgh New Veterinary College, in collecting information on Poisons; Drs Douglas Mac-lagan and Stevenson Macadam, of Edinburgh, in revising some of the tests for Poisons; and Mr Charles Hunting, of South Hetton, for the careful reading of the Fourth Part. To them I tender my grateful acknowledgments.

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# INTRODUCTION.

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## FORMS OF MEDICINES, AND METHODS OF THEIR ADMINISTRATION TO DOMESTIC ANIMALS.

### I. *Solid Forms.*

I. A BALL (Bolus) is a compound of various agents, solid, semi-solid, and liquid. These are mixed into a mass sufficiently firm to admit of being formed into cylindrical rolls, about two inches in length and three-fourths of an inch in diameter. The active ingredients are in the shape of powder, extract, and even in solution, incorporated in linseed-meal, or liquorice and treacle, soft soap, honey, or syrup. The size of the bolus is entirely regulated by the capacity of deglutition in different animals; excessively large balls may lodge in the pharynx, or be swallowed with difficulty. In exhibiting them to the horse, it is essential to wrap them in paper, which should not be too thick, but firm in texture. Deliquescent or copiously efflorescent substances are not adapted for exhibition in this form, and care should be taken not to render the balls too hard, or too insoluble in the gastric secretions.

Dexterity in the exhibition of balls is a very useful acquirement for the Veterinarian; but comparatively few people succeed in effecting their object with neatness and precision. I have been somewhat surprised how in France practitioners shrink from introducing their hand into a



horse's mouth, and resort rather to other methods of giving medicine.

The rules to be attended to in administering medicine in this form to the horse are :—1stly, Turn the horse from his manger, with a halter on, held by a groom or assistant. Attempting to give a ball to a horse tied up in a stall has before this proved a fatal experiment to the operator. 2dly, It is extremely dangerous to resort to twitching with awkward horses, as our power in keeping the mouth open depends on the moderate stretch on the tongue, which is not felt or cared for by a horse severely punished with a twitch on his ear. 3dly, Stand on the off side of the horse's head, with a towel in the left hand to wipe the mouth, should there be, as in some cases, an excessive amount of secretion to interfere with holding the tongue; the left hand is placed on the horse's crest, whilst the right is introduced into the angle of the mouth, the tongue is seized gently, wiped if necessary, grasped with the left hand as in Plate I., and drawn downwards. Some persons introduce the left hand so as to compress the tongue against the left side of the lower jaw, bringing it between the molar teeth on that side; and others drag the tongue out of the mouth, and hold it firmly. It is extremely important to hold it so that, in any movement the horse may make, there is a point of support for the hand against the lower jaw. (See Plate I.) Pulling on the tongue may give unnecessary pain, make a horse restless, and in tossing his head about the organ may be severely lacerated. 4thly, The ball, which has been ready all the time in the assistant's hands, or in the waistcoat-pocket, or grasped by the lips of the operator, is seized as in Plate I., and, avoiding unnecessary bustle and hurry, it is carried up the middle of the mouth and dropped on the back of the tongue; at the same instant the tongue is quietly let loose, and as the horse draws it back, the ball is engaged

in the pharynx, whence it cannot return unless by a fit of coughing ; as soon as the hands are withdrawn, the mouth is kept closed, and the left side of the neck watched to see the ball pass down the œsophagus ; this may occur before looking round to the neck, so that, after waiting a little, if the ball be not seen, the horse should be caused to drink a little water. The practice of giving a little water to drink after giving a ball should always be adhered to, as it is disagreeable to leave an animal, and when the operator's back is turned, the ball be coughed into the manger ; moreover, in morbid conditions of the system, and in the unnatural manner in which the bolus is swallowed, the passages are not well lubricated, and the ball may be some time before it penetrates the cardiac orifice.

With vicious horses, horses with narrow mouths, and in

Fig. 1.

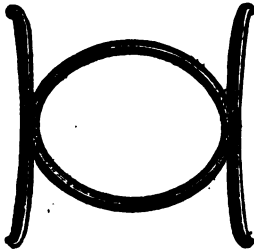


Fig. 2.



cases of trismus, when balls are to be given, instruments should be used. Balling irons, to prevent the closure of the mouth, have been constructed of various kinds; the simplest, represented by fig. 1, is made of malleable iron, and is adapted to the average size of a horse's mouth. Perhaps the most useful is Mr Varnell's improved balling iron, fig. 2. It may prove serviceable in cases where with difficulty a horse is made to open his mouth as wide as it is desirable, and if, instead of giving balls, the teeth and other parts of the mouth have to be examined and operated on.

In very narrow mouths, in young animals and in cases of spasmodic contraction of the masseter muscles, balling pistols must be employed. Occasionally a sharp-pointed stick fixed into the ball is sufficient to carry the latter and deposit it into the pharynx. At other times the instrument shown in the accompanying fig. 3 had better be used; or the more simple, and perhaps equally effective, contrivance of a hollow stick, with a wooden cup at one end, and provided with a central rod of iron to push the ball out of the cup, will suffice for most purposes. See fig. 4.

Fig. 2.



Fig. 4.



Boluses are often given to the dog, the mouth in this animal being held as in *a*, Plate V. Some practitioners prescribe balls for cattle, but only when rumination is suspended. They should be, and indeed practically are, discarded from cattle practice.

II. PILLS (*Pills*) are preparations similar to balls, but smaller and spherical. They are much used for dogs. If composed of vegetable substances, they should not exceed 4 or 5 grains; if of metallic ingredients, they may average from 5 to 10 grains. They may be coated with gelatine if containing medicines offensive to taste or smell. To exhibit a pill to a dog, the animal should be placed between the knees, the head grasped so that the jaws are forced open, as in *a*, Plate V., and the pill dropped at the back of the tongue, the mouth suddenly closed, and efforts to deglutition excited by gently manipulating the throat.

III. POWDERS (*pulveres*) are very convenient to mingle with the food, to dissolve or suspend in the animal's beverage, to be applied over absorbing surfaces, or placed on the tongue to be swallowed. They may be destined to exert a local effect, as astringents or caustics, on congested, or sore surfaces. Medicines may be more or less finely powdered, by pounding, grinding, levigation, elutriation, precipitation, etc. Animals in disease may have no appetite, and, what is more rare, present a disinclination to drink. In these cases, powders are inadmissible. They are very serviceable if agreeable to the taste; if not, unless tasteless, animals will refuse them. The form of powder is unsuitable for deliquescent substances, and for combinations consisting of agents which become liquid or semi-liquid by chemical reaction, as is the case when acetate of lead is mixed with sulphate of zinc. It is a convenient method of giving medicine to vicious or unmanageable animals. Powders are frequently prescribed for dogs, cats, and pigs.

Mineral tonics, such as the preparations of iron, are best given in the form of powder in food, so that they enter the stomach when the secretion of gastric juice is excited.

IV. ELECTUARIES (*electuaria*) consist in soft solid preparations, containing medicines that are tasteless or agreeable to the taste, and not too bulky. The materials with which the medicine is mixed, are honey, treacle, sugar and gum, linseed and water, etc. Electuaries should be more used in Veterinary practice. They are very useful in prescribing astringent or sedative substances when there is much irritation of the throat and cough. I avail myself of them much in treating the diseases of young animals, and largely for horses. They are best used with wooden or metallic spoons, and are smeared on the tongue or on the inside of the cheeks.

V. CONSERVES (*conservae*) and confections are very rarely employed by Veterinarians. The only preparations of this kind I use, are the confections of senna and of roses; the latter, simply as a vehicle.

VI. EXTRACTS (*extracta*) consist 'of the active ingredients of complex medicinal substances, extracted by water, alcohol, or acetic acid, or by expressing the juice of plants, and then evaporating to solid consistence.' They are modes of pharmaceutical preparation, rather than forms for administration. Some of them, such as the extract of belladonna, may be smeared over the tongue; others may become so dry as to admit of being given in the shape of powder; but they are most frequently added to mixtures, or given in the form of pill.

VII. CATAPLASMS or POULTICES (*cataplasmata*) consist in soft, moist, and somewhat tenacious applications to the external surface of the body. They may be cold or hot, and used for producing a local impression in virtue of the water or medicine they contain, or an impression on the system by absorption of a medicinal ingredient.

VIII. OINTMENTS (*unguenta*), CERATES (*cerata*), are soft solids for external use. The first contain fat or oil, and must be applied with friction; the second are of a firmer consistence, owing to the admixture of wax with the greasy matter of ointments. Cerates are intended for their local effects, but ointments may become absorbed and act very powerfully on the system.

IX. PLASTERS and CHARGES are now very rarely used in Veterinary practice. The first only differ from cerates in possessing firmer consistence, and requiring heat to soften them that they may spread. Charges are plasters applied by pouring the melted ingredients over the skin, and covering them with tow and rag.

## II. *Liquid Forms.*

Medicines in the liquid form are exhibited internally, or used for external purposes.

I. MIXTURES.—Fluids containing substances in solution and suspension. It is extremely convenient to prescribe insoluble preparations in this way. Oleaginous substances and syrups are sometimes combined, such as in the castor oil mixture used for dogs.

II. SOLUTIONS—Liquores.—Fluids containing completely soluble medicines. Some of the active ingredients are tinctures, extracts, and other fluid preparations obtained by dissolving from a substance the essential principle.

III. INFUSIONS.—These are obtained by pouring over vegetable substances cold or hot water. The active prin-

ciples are soluble, and hence obtained in solution ; to effect this, too much heat is sometimes to be guarded against in using warm water, and sometimes cold is objectionable, as being tardy and dissolving vegetable albumen.

IV. **DECOCTIONS**, prepared by boiling agents derived from the vegetable kingdom, in water.—Sometimes a degree of heat short of the boiling point will serve to remove the active ingredient of a medicine, which, by being volatile, would pass off if the material was absolutely boiled. Hence the value of preparing decoctions, etc., by steam.

V. **TINCTURES**.—The active principles of medicines dissolved in alcohol, by steeping substances in spirit for a certain time. Spirits differ from tinctures in being obtained by distillation.

VI. **WINES and VINEGARS** being solutions of medicines in wine, vinegar, or dilute acetic acid, are rarely employed in Veterinary medicine.

VII. **SYRUPS** are valuable in treating the diseases of dogs. Simple syrup is often the *menstruum* employed into which tinctures are dropped, extracts dissolved, and powders suspended. But there are official preparations, consisting in watery solutions of sugar impregnated with the active principles of medicinal agents, such as the valuable syrup of the iodide of iron, and the syrup of poppies.

VIII. **HONEYS and OXYMELS**,—the first being like syrups, only containing honey instead of sugar ; and the latter being a mixture of vinegar and honey containing other preparations,—are not frequently employed in Veterinary practice.

**XI. FLUID EXTRACTS.**—‘Highly concentrated solutions of the active constituents of medicines, or the active constituents themselves extracted in the liquid state; they are often very convenient and efficient preparations.’

*Administration of Medicines in the liquid form.*—1stly, To the horse. We prefer the form of ball for the exhibition of medicines to horses; but we are often called upon to exhibit draughts or mixtures. Draughts should not be too bulky; if possible, not nauseous, and not so astringent or caustic as to interfere with animals swallowing. Mixtures are given from bottles made of glass, tin, or other material, or from horns. The latter are much to be preferred. The objection to the bottle form is, that from a narrow neck the liquid does not flow steadily and at will, from the difficulty with which air enters a narrow neck to displace the contents of the bottle. This is the objection to the form of horn in fig. 5. Persons are attracted by

Fig. 5.



the handle, the neat manner in which the horn may be closed at its narrow end; but practically, it is not so handy and efficient as a horn the natural shape of which is preserved, except at the opening at its broad end, which is cut obliquely. The horn is to be chosen, so that the apex turns downwards when the oblique opening has an upward direction; and the accompanying fig. 6 represents one of very good shape.

As regards the process of exhibiting a drench to a horse, it is not always well understood; and hence serious



and fatal consequences have resulted from the exhibition

Fig. 6.



of remedies in the liquid form. The rules to observe are :—1stly, Hold the horse's head up at a moderate height, so that the line of the face is horizontal. 2dly, Secure the tongue to prevent the lapping out of the liquid, but allow of sufficient movement of lips, tongue, cheeks, and jaws, so as not to interfere with the first act of swallowing. To draw the tongue forcibly outwards is very injudicious, as if the tongue be stretched it does not aid in pressing back the fluid, which gravitates as the tongue is pulled upon, and the larynx and pharynx advance;—the animal may thus be choked. 3dly, If an animal makes an effort to cough, rather lose the draught than risk the danger of suffocation, which so readily occurs if fluid be suddenly thrown over the tongue. 4thly, Entice efforts of deglutition, should the horse obstinately and artfully retain the liquid in his mouth. This is effected by manipulating the throat, and exerting pressure in the intermaxillary space.

The methods of holding horses during the exhibition of a draught are various, but the most important ones are three. In the first place, by ropes and pullies a horse's head is pulled up from a beam or other high object in a stable or shed. This is very objectionable, especially in a vicious horse; and we have never found it to answer better than the second manner of introducing a rope-noose

over the upper jaw. This noose is attached to a stick, or slipped over a stable-fork prong (see Plate III.); and a man can then hold up the head of the heaviest horse and follow him in his movements. It requires management. I do not like the fork, as it is a dangerous instrument, and prefer an ordinary twitch. In Plate II., the third manner of holding a horse's head up and exhibiting a drench is represented. It is the most simple and useful method. It only requires one person, who holds the tongue, places his thumb round the lower jaw, and with his fingers causes the horse to open his mouth whilst the draught is poured out of the horn with the right hand.

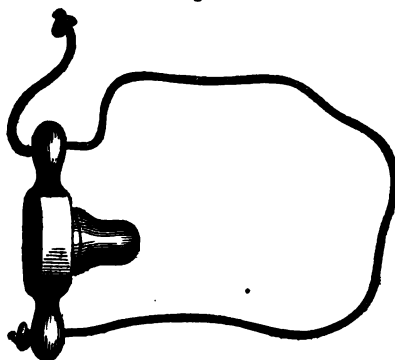
In cases of lock-jaw or tetanus, it is difficult to exhibit even fluid medicines to horses. There are two useful methods, however, to accomplish this. The first is by the introduction of a tube into the œsophagus through the mouth; and the second is by pouring or pumping the fluid through the nose. The objections to the latter procedure are not so weighty as at first sight may appear, provided the fluid is a perfect solution, and poured down the inferior or posterior meatus with care.

2dly, The exhibition of drenches to the Ox.—The horn should always be used. The manner of holding the horn, of securing the animal, and giving the drench, is clearly represented in Plate IV. The chief points to attend to are—*a.* not to irritate the animal; *b.* always to attempt the operation from the right side; *c.* seize hold of the upper jaw by passing the left hand over the head, and bend the latter far round to the right; this simple contrivance very effectually tames or disarms even a vicious bull, ox, or cow; *d.* the operator should stand well with his back against the animal's shoulder, propping himself up with the right leg; to do this the animal should, especially if awkward, be against a wall on its left side. I have known an incautious person to be severely bruised and thrown into the

manger by proceeding up to the head of a cow, not getting full command of the animal, and presenting his back to its hind extremities, with which an ox can strike effectually forwards.

Sometimes the organs of deglutition are paralysed in cattle, as in cases of parturient apoplexy ; at other times there are foreign substances impacted in the œsophagus. With the view of displacing the foreign object in the one instance, and of introducing medicines in the fluid state in the stomach under any emergency, a hollow probang is used, precisely like the hollow tube of the enema-pump drawn at fig. 18, page xl, with the end drawn in *b* to it instead of the one *a* affixed, as shown in the drawing mentioned. The fluids may also be forced into the stomach by the pumping action of a syringe. The probang is guided through the centre of the mouth by a gag. We give the drawing of two forms. Fig. 7 is in our opinion the best. The drawing is copied from one in Hering's

Fig 7.



Operationslehre ; and the advantage over the common gag is, that it is tied by a rope on to the mouth, and then, in virtue of its shape, it is a more complete guide to the

probang than the instrument represented at fig. 8. The

Fig. 8.



latter is the common gag, to be held in the animal's mouth by an assistant, whilst the operator uses the probang.

As the first stomach of ruminantia is very capacious and lying flat against the left side of the belly; moreover, as cattle are not very subject to peritonitis from punctured wounds of the abdomen, an expedient has been adopted of puncturing the stomach to evacuate it, or to introduce into it medicinal agents. The stomach is punctured by trochars, such as are represented by figs. 9 and 10.

The first has a cylindrical canula and stilet, the canula being somewhat less than a third of an inch in diameter, and three and a half inches in length. The one represented by fig. 10 is flattened, and the canula half an inch in its greatest width, and four and a half inches in length. These trochars are used in the following manner:—A spot is chosen midway between the last rib and antero-inferior spine of the ileum, and about eight or nine inches

Fig. 9.



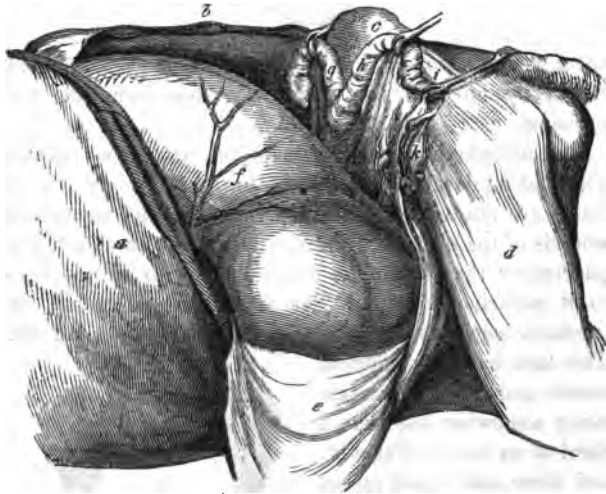
Fig. 10.



below the transverse processes of the lumbar vertebræ; a small incision is made through the skin with a lancet or

bistouri, and then the trochar is pushed with sufficient force and impulse at once to penetrate the abdominal parietes and rumen. The accompanying engraving (fig. 11), copied from a wood-cut in Hering's *Operationslehre*,

Fig. 11.\*



will show where the rumen is situated, and how extensive the space is over which we may select the seat of puncture.

I may mention that the canula is usually introduced in the paunch to admit of the escape of gases in tympanitis, and which are not readily neutralised by substances given by the mouth. When the canula is in, neutralising agents and other medicines are poured through it. Sometimes

- |  |                           |
|--|---------------------------|
| * a. Last rib.                               | e. The abdominal walls.   |
| b. Transverse processes of lumbar vertebrae. | f. Left sac of the rumen. |
| c. Antero-inferior spine of the ileum.       | g. h. Horns of uterus.    |
| d. Hind extremity.                           | i. Left Fallopian tube.   |
|  | k. Left ovary.            |

the rumen is full of green food undergoing decomposition ; and it is expedient to make a broad incision through the abdominal wall and coats of the rumen, to evacuate the latter mechanically. This is effected by a bold incision with a knife, at least four inches long and one broad, with a stout handle ; the knife is imbedded sharply at the point where we have recommended to introduce the trochar, and then drawn downwards and outwards so as to make an incision at least five inches in length. The hand may then be introduced in the stomach, and the contents withdrawn, with due care that they are not allowed to enter the peritoneal cavity.

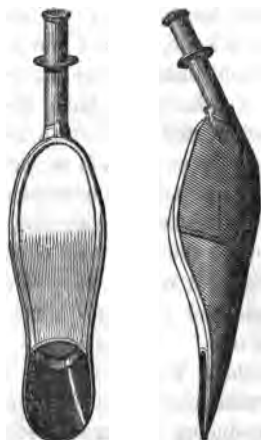
3dly, It is very easy to exhibit a drench to a sheep or goat, and needs no special description as for the horse and ox.

4thly, To 'drench' a pig, considerable care and a peculiar method must be adopted. One way consists in introducing a tolerably stout noose over the upper jaw, which is held firmly in the operator's right hand ; the pig is held between the legs ; and an assistant may aid in securing him, whilst the mixture to be given is poured out of a bottle, so that it trickles down the cheek and is swallowed. If the fluid be poured in rapidly, as the pig is certain to scream, there is great danger that the fluid will pass into the trachea and suffocate the animal. Not unfrequently has a person, in giving medicine to a pig, observed it either suddenly or almost imperceptibly losing foot-hold, and dropping dead at his feet. A practice has been found to succeed admirably, which has led me to have an instrument constructed on the principle of the 'medical spoon.' The practice consists in taking an old shoe, cutting off the toe part of the upper leather, allowing the pig to suck the toe part of the sole whilst the fluid to be administered is poured into the shoe. In this way the pig absolutely sucks the mixture ; and there need be no apprehension of

untoward consequences. The instrument represented by the accompanying drawings, 12 and 13, is constructed of tin. The body is covered with leather, and a tongue-shaped portion of varnished leather, which the pig is allowed to take into his mouth, is made to project from the tin anteriorly. The medicine is introduced into the apparatus by the lower aperture before we commence the process of administration, and, by holding the thumb over the tube at the upper part, the flow of the liquid from the instrument is much checked. The length of the instrument over its convexity, measuring from extreme points, is 14 inches; the body is 9 inches in circumference at its broadest part; the tube is 4 inches in length, and two-thirds of an inch in diameter.\*

Fig. 12.

Fig. 13.



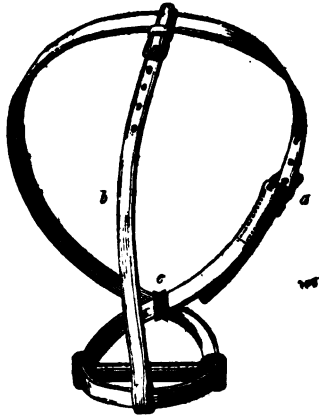
5thly, Dogs are often very troublesome if attempts be made to give them oleaginous or bitter mixtures. With syrups we have usually no difficulty; and fluids of this description may be poured into the mouth readily. The most efficient way of performing the operation, according to my experience, is that of tying the dog's mouth, causing the animal to be steadily held, and then drawing out the cheek, which acts as a funnel, into which fluids are poured. See Plate V., fig. 2. Sometimes a dog obstinately clenches his teeth and will not swallow; to obviate this, a bit of wood is

\* This, like all other Veterinary instruments, may be obtained from Mr Mackenzie, Surgical Instrument Maker, South Bridge, Edinburgh.

first introduced into the mouth, which is afterwards tied, as before mentioned. Tying the dog's mouth is of great advantage, for two reasons:—Firstly, any dog may be thus handled without fear of being bitten; Secondly, the dog is unable to throw out the medicine as when his tongue and jaws are loose.

Fig. 14.

To do away with the strings and odd sticks, I have had constructed the instrument drawn at fig. 14, which recommends itself on the score of simplicity, neatness, and thorough effectiveness. It is a figure-of-8 strap, with the anterior narrow part crossed by a



steel rod covered with leather, between two and three inches in length. The buckle, *a*, is sufficient to tighten both the nose and collar band. The strap, *b*, extends from the nose band to the collar, so as to prevent the former slipping or being forced over the nose by the dog's paws.

6thly, We are not often called upon to give fluids to cats; but it is readily done by using an ordinary spoon, and pouring the fluid into the animal's mouth. The best way to secure the cat for this and many other operations, is to hold him as represented in Plate VI. Grasp the hind legs above the hocks, between the little and ring finger; the fore extremities above the elbows, between the median and index fingers; and place the thumbs against the postero-lateral parts of the head at the base of the ears. In this way a cat can neither scratch nor bite, and very ordinary strength is sufficient to control the movements of a powerful animal.



*Injection of Fluids in the Veins and Transfusion of Blood.*

Medicinal agents may be introduced in solution in the veins. Water alone, if directly passed into the circulation, will produce a marked impression on the system, and speedily purge, etc. Vegetable tinctures have been the remedies most frequently thus injected.

The jugular vein, from its superficial position at the upper part of the neck, and being a large vein, is the most convenient one in all animals for the performance of the operation.

In the horse and ox the vein is opened with a common fleam. The openings in the vein and skin must be made to correspond, and the liquid can then be injected with a syringe, or by introducing into the vein a wooden or metallic tube, to which a bladder filled with the injection is attached. Colin has con-

Fig. 15.

Fig. 16.

structed a graduated glass syringe which indicates the quantity of fluid passed into the vein, and, moreover, prevents the introduction of air. The best method of introducing remedies in the veins is probably by means of either of the instruments figured in the accompanying woodcuts, 15 and 16. The first is known as Helper's Funnel, and its long narrow tube is well adapted for introduction in the jugular. A small whalebone stick is used to plug the tube, so that, when the funnel is filled, the plug is withdrawn, until the liquid has almost completely passed through.



Difficulty is alone experienced in first introducing the instrument into the vein. It should always be made to take the direction of the outflowing stream of blood, and great errors have been committed, in performing experiments, by the tube of a syringe or funnel being introduced immediately beneath the skin into the cellular tissue, and not into the vein at all.

Fluids to be introduced in the circulation are generally in small quantities; they should always be warmed to the temperature of 98° Fahr., and all solid particles which may be floating in solutions should be avoided as much as possible, lest, by obstructing the capillaries of the lungs, they should do harm.

*Transfusion of Blood.*—It is likely that the transfusion of blood from a vigorous, healthy animal into the veins of a weak and sickly one, will be more practised than for the past. It occurred to the ancients, that the quantity and quality of blood in a weak system would most readily be beneficially modified by a direct introduction of healthy blood in the system. Many experiments have been performed on the subject, and it has been discovered that the animals between which transfusion is effected need not be of the same species, and the blood of lambs and calves has replaced blood abstracted from men, with beneficial effect.

The clotting of blood in its transfer from one animal to another has been the cause of great apprehension; but, apart from the possibility of fixing a flexible tube on the vein of a healthy subject, and introducing the free end into the blood-vessels of the one requiring blood, so as to have an immediate flow without the slightest exposure of blood, it has been discovered, and the experiments of Dumas, Prevost, Dieffenbach, Polli, and others, show that, if the fibrin be abstracted from blood by the process of flogging, the defibrinated fluid is as valuable as, and possesses all the revivifying properties of, blood unchanged.\*

\* See Dr Wood's *Therapeutics and Pharmacology*, vol. i., p. 199.

The injection of defibrinated blood may be performed as the injection of other fluids, as above described. Fig. 16 represents an instrument which Hering says he has used with advantage, no difficulty being experienced in the operation.

With reference to the old process of immediately connecting the blood-vessels of a healthy and sickly subject, for the transfer of blood from the one to the other, we can quote the interesting observations of Mr James Farrall of Dublin, who has recently had success by adopting it with some modifications :

“ During the autumn of 1856 and spring of 1857, an epidemic prevailed in and about Dublin, indeed, I believe, all over Ireland, to a greater or less extent, which at its outset presented the leading features of influenza, but of a low typhoid character ; it was much more prevalent along the eastern coast than on the western or the midland counties. In Dublin it was very fatal, and in most of the cases which I was called on to see, I found intense debility, which in some instances had come on within a few hours after the disease had first manifested itself. Horses were seen to eat their food in the morning with every appearance of health and good spirits, and before evening they were found resting against the side of their stables for support, so rapidly had debility followed the first symptoms of the disease.

“ With all these cases the principal difficulty was to support the strength, watching, at the same time, closely the symptoms which manifested themselves as the case progressed. Sometimes the urinary organs became affected, and repeated evacuations caused the patient to sink rapidly. In others the bowels were involved, and to such an extent, as to resemble bad cases of cholera in the human subject ; but the worst forms of this disease that I witnessed were those in which the animals had been bled previously to my having seen them. With those cases which had not been bled, I had, in treating them, an average amount of suc-

ness ; but in most of those that had, I am bound to admit I was by no means so fortunate. I found that everything I could do to restore the vital powers was, in the majority of cases, useless, and, save in the instance of a few young, vigorous horses, collapse set in within a few hours after the abstraction of the blood.

"I gave a fair trial to all the usual remedies. In cases where influenza had assumed a typhoid form, and in which the leading symptoms were a feeble, thready pulse, quick and laboured breathing, cold extremities, clammy mouth, drooping eyelids, utter prostration of strength, and, in short, the usual symptoms of collapse, especially such as had been reduced to this state by loss of blood, or by excessive purgation, I was generally unsuccessful. Discouraged by repeated failures, I determined to try the effect of 'transfusion,' believing it to be a not unnatural restorative, especially in cases where the improper abstraction of blood had superinduced the symptoms above alluded to.

"To enable me, therefore, to give this operation a fair trial, I commenced a series of experiments, so as to discover the simplest, safest, and most effectual method of conveying blood from one animal into another. I first tried the transfusion syringe, which has been used by medical practitioners for this purpose ; but, whether from want of skill in its use, or from defect in the instrument, which had been recommended to me as one of the best, or from some other cause, I cannot tell, but certain it is, I was in no case as successful with it as I was with a more simple apparatus. I fancied that the blood lost much of its vitality by being exposed to atmospheric air, and also by its being forced and compressed within the cylinder of the instrument. These impressions as to the cause of failure induced me to undertake several experiments with a view to the construction of an instrument which would fulfil the requisite indications, viz., to allow the blood to

pass freely from the vein of the healthy into that of the diseased subject without coming in contact with the atmospheric air, and without alteration of its temperature. I at length adopted an exceedingly simple apparatus, which I can describe in a few words. It consists of an india-rubber tube of some two and a half feet long and three-eighths of an inch in diameter; that is, about the calibre of the vein in the adult horse. This must first be turned inside out, and carefully cleansed of all sulphur, arsenic, or other matter used in vulcanizing. To either end of this I fitted a silver tube, curved somewhat like a syphon, so that the end, which is slightly rounded at the point, might be passed easily into the vein, both tubes being exactly the same. A narrow zinc or tin trough is required to contain hot water, in which two-thirds of the tube should be immersed during the time that the blood is flowing. This completes the apparatus, and, being prepared, and the horses ready, held by assistants, the jugular vein of the healthy horse, from which the supply is to be taken, is to be opened, and into it one of the silver tubes to be carefully passed, point upwards, so as to receive the current of blood as it flows back from the head; the operator holding the other end, and, having previously opened the corresponding vein in the patient, he should wait till the current is passing freely down the tube from the healthy horse, and then bring it in contact with that which is now flowing slowly from the patient; he should pass the end of the tube carefully into the vein, point downwards, by which means the possibility of any air getting into the tube is avoided. The quantity to be transfused is readily ascertained by watching the expression of the eyes, and noting the pulse carefully. So long as there is no dilatation of the pupils, and so long as the heart's action is not very much affected, the blood may be allowed to flow on uninterruptedly; but as soon as the pupils become dilated, it is

necessary to lessen the supply gradually, by compressing the tube with the finger and thumb. If the dilatation disappear after a minute or two, the blood may be again allowed to flow; but if the dilatation increase you must stop, or otherwise injurious consequences will result. In the cases of two animals which I purchased for the purpose of experiment, I purposely let the blood flow after the dilatation of the pupil had manifested itself, in order that I might see the result, and I found that the dilatation of the pupil increased; and in one of the cases, after winking both eyes three or four times in rapid succession, the horse reared up and fell back. In the other case, I forced the blood in from an india-rubber enema bottle; the pupils first became still more dilated, the breathing very quick and difficult, and the eyes assumed a wild, agonised look, and the animal, with a sudden bound forward, fell dead. I had my finger on the artery during the entire time, and observed a great unsteadiness and fluttering of the pulse, which increased in frequency until the instant before he fell. In the first of these cases I did not force the blood into the vein, but allowed it to flow until I perceived the injurious effects on the horse; he tottered and fell, but in a short time recovered, and was walked back to his stable; he died in the course of the night, and on examining his head, I found considerable congestion of the brain. The tube which I used will transfer about three quarts of blood in eight minutes; at least I judge so from the fact, that when used as a syphon, it will pass three and a half quarts of water, and a little less of oil, from one vessel to another in that time.

“In one of my successful cases, phlebitis supervened both in the healthy and diseased horse. I think I am correct in saying that this disease is by no means so likely to occur in horses as in human beings, and is certainly not so formidable; but nevertheless I am quite sure that it may

happen as a consequence of the operation if the instrument be not kept scrupulously clean, and also if great care be not taken in its introduction into the vein. Having, from these and other experiments, not necessary to detail, determined on the mode of operating most likely to be successful, I shall now proceed to state the result of four cases in which I have operated, and which I think I may look upon as having been followed with entire success. In three of the cases the patients had been bled a short time previous to my having seen them, and were so much weakened that they could scarcely walk. In the fourth case a drastic purgative had been administered, causing superpurgation and great prostration of strength. In each of the four cases the condition of the patient was so similar, that the description I have already given may answer for all. Having selected a healthy young horse from which to obtain the blood to be transfused, I opened the jugular vein in the patient and in the healthy subject, and having inserted the tube, as before described, into the vein of the healthy horse, I placed the india-rubber tube in the tin trough containing the hot water to maintain its temperature, and the other curved tube into the descending portion of the vein in the patient. As soon as the current from the healthy horse had completely expelled all atmospheric air, the instrument being thus arranged, the blood flowed freely from the vein of one horse into that of the other in an unbroken current. The average quantity of blood transferred in each of these cases was about three quarts. I observed no particular symptoms to follow from the transfusion until two quarts or more had passed from the healthy to the diseased subject, but as soon as about this quantity had flowed into the diseased subject, there appeared to be produced an amount of stimulation indicated by an increased action of the heart ; at the same time the pupils began to dilate, and the countenance evinced an

anxious expression. My former experiments led me to watch with great care the progressive dilatation of the pupil, and I deemed it expedient in each case, when this symptom was well developed, to compress the tube, so as to diminish the current, and allow the transfusion to proceed more gradually and slowly. Occasionally I almost completely interrupted the current until the subsidence of this symptom; and I found that when about three quarts had been transfused, any additional quantity was followed by unpleasant symptoms, which indicated the necessity of stopping the operation. On removing the tube and closing the vein, all symptoms of irritation gradually subsided, and the pulse, from being rapid and irritable, became slower, stronger, and fuller, gradually approaching the healthy standard.

“In each of these four cases the reaction was steady and progressive. The natural warmth of the extremities was gradually restored, and in the course of ten or twelve hours the patients presented other equally unmistakable symptoms of amendment, such as returning appetite, more quiet and steady respiration, cheerfulness of countenance, and a willingness to move about; from this point there was a gradual improvement, and in a short time they were pronounced cured.”—*Dublin Quarterly Journal of Medicine*. Feb. 1858.

*Injection of Fluids into the Mouth and Stomach.*

We have before adverted to the occasional necessity of injecting fluids directly into the stomach of the horse, or of ruminants; see page xxiii. We need only mention here, that sometimes fluids are syringed into the mouth to act as gargles, or as local applications to the buccal membrane or to the throat. The French Veterinarians adopt this method of gargling to a considerable extent, but we



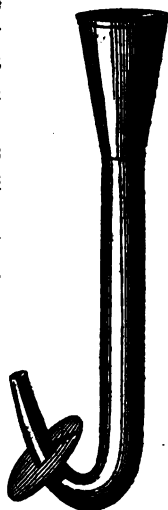
rarely do, except in cases of eruption, or when the mucous membrane of the mouth has been injured by acrid or caustic agents.

*Injection of Fluids into the Nose.*

Fluids are sometimes poured into the nose that they may be swallowed; but, usually, the internal exhibition of remedies by the nose is effected by means of a stomach-pump with a long flexible tube, as represented in fig. 18. The practice is an objectionable one, but may under certain circumstances be absolutely indispensable.

The introduction of liquids in the nasal chambers to exert a curative influence on the schneiderian membrane, is a more common practice, and attended with much good. The old method of performing this operation is simply to use a syringe, or to elevate the head and pour lotions, etc., into the nose. Professor Rey has adopted a very simple and satisfactory procedure. It consists in causing the fluid to rise in each nasal chamber by atmospheric pressure, and when the one division of the nose is thus filled, the liquid passes over the septum, and is seen to flow out at the opposite nostril. In this way the liquid most effectually touches every part of the schneiderian membrane, and a mild solution of sulphate of zinc or copper, and other sedative, astringent, or antiseptic lotion, may be brought in contact with the suppurating or ulcerated surface. The instrument which Professor Rey employs for this purpose, and the advantages of which I have fully experienced in practice, is drawn at fig.

Fig. 17.



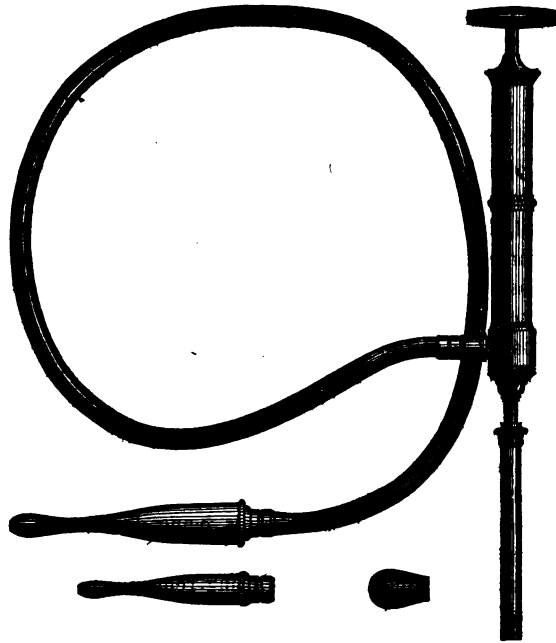
17. The long tube is fifteen inches in length, and one and a half inches in diameter, expanding and funnel-shaped above, where the broadest part is two inches wide. The short arm is five inches in length, and the aperture two-thirds of an inch in diameter. Over the short arm is passed a closely-fitting leather ring, four and a half inches in diameter. This serves as the surface over which, and round the short arm, wet tow may be adapted, so that, on introducing the small tube in the nostril, the latter is compressed carefully on to the tow; at the same time fluid is poured into the funnel, and rises in the nasal chamber. If the horse's head be bent in and held as much as possible in a perpendicular position, the lotion will pass out at the opposite nostril. We sometimes have a little difficulty in performing this operation with awkward horses, but by quiet means I have always seen them accustomed to the operation. Some persons advocate twitching; occasionally the ear may be twitched; the animals sometimes require to be blindfolded, but at others it is best to let them see what is being done; and most frequently not the slightest trouble attends the injection. It is an invaluable method of using remedies in the treatment of diseases of the nose.

*Injection of Fluids in the Rectum.*

A number of instruments have been constructed with a view to force fluids into the intestines of man and animals. The false notion has been acted on, that enema syringes or pumps are valuable in proportion to the force with which they will propel liquids into the intestinal tube. It has been said, that by that means you overcome obstructions, and may even under other circumstances carry nutritive fluids into the cæcum, where they will be absorbed. As regards the end, desired by some, of propelling fluids

far up in the alimentary canal, the pump drawn at fig.

Fig. 18.

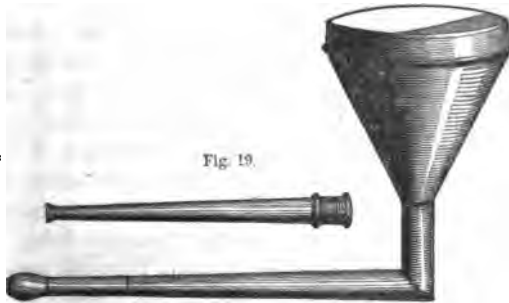


18 is certainly the most convenient and effectual. The tapered wooden or metallic end of the tube is introduced into the rectum, the open end of the syringe is placed in a pail, and by pumping, from a peculiar arrangement of a ball at the nozzle of the syringe, the liquid is forced entirely through the flexible tube into the intestine.

It is quite certain that, in practice, we find those instruments most useful which admit fluids into the rectum without inordinate force; and, for this purpose, as I have before said, in the *Highland Society's Transactions*, the ordinary pewter syringe is an efficient instrument, objection-

able, however, on account of its weight and bulk, and consequent inconvenience. A tolerable substitute, and one not liable to the same objection, is a bladder attached to a tube, such as represented in fig. 19. The tube is

Fig 20.



commonly made of wood—an objectionable material, because very subject to splitting in alternations of moisture and dryness, particularly so if the bore of the tube is of considerable size, as it should be to secure efficiency. A tinned copper tube is preferable, as combining lightness with strength; block-tin would have the further advantage of cheapness, though at the sacrifice of a no less important consideration—durability. A much more efficient instrument is the one represented in fig. 20. It consists of a straight metallic tube 12 inches long, tapered and rounded off at one end, bent at a right angle at the opposite extremity, which supports a broad funnel about 6 inches deep, and 7 in its greatest diameter. The funnel need not be so large. In using this instrument, its extremity requires to be oiled before introduction into the rectum; so soon as this is effected, the fluid—water, with a little oil, is preferable—is poured into the funnel. Experience proves, that no pumping force is required to inject fluid into the intestines, the effect of gravitation

fulfilling the same purpose in a much more simple manner. As the fluid from the funnel gravitates into the rectum, bubbles of gas escape; the action of the gut, thus mildly stimulated, continues until, with the repetition of the process at intervals of a quarter of an hour, the required evacuation is induced, with its attendant relief. In farm-houses, or every other establishment where large numbers of horses are kept, an instrument like the one described should be kept: made of block tin, it is light, cheap, and very durable,—qualifications which, conjoined as they are with the utmost simplicity and thorough effectiveness, render the contrivance one of the most useful in relieving disease. It may not be uninteresting to mention, that I first learned of the instrument from my father, who had seen it in use amongst the Ligurian peasants, and confirmed their praises of it in repeated experimental applications, and it is now on the basis of experience that I have ventured to state the above decided opinion.

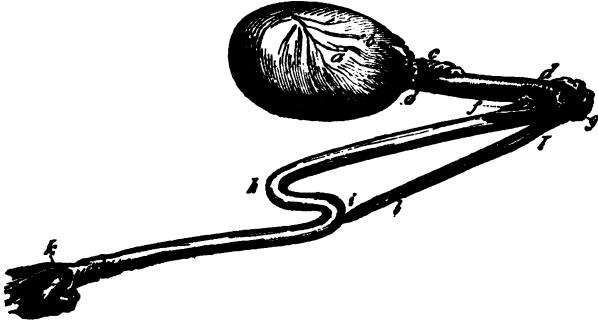
*Injection of Fluids in the Urethra and Bladder.*

This operation, so simple in man, is much more difficult in the males of our domestic animals, either from the length or peculiar construction of the urethra. By means of a long, flexible catheter, the urinary bladder of the horse may be injected; but such an attempt must fail in the ox from the peculiar curve of the penis, which is represented in the subjoined woodcut.

In the ox it is essential to make an opening into the urethra over its first curve *g*., see fig. 21, if we wish to inject the bladder. The curves *h*, and *i*, render it impossible to pass an instrument through the urethra, as in the horse. In the dog we experience some difficulty in injecting and in passing catheters, from the existence of the bone in the penis; the urethra firmly contracts when

any object is pressed back beyond that portion of it lodged in the bony groove. Persistent and not impulsive efforts will overcome the obstruction, and a catheter may thus be introduced in the bladder.

Fig. 21.\*



### III. Remedies in the Form of Gas or Vapour.

It is not unusual to inclose animals in chambers and cause them to inhale gases, such as chlorine. The gas is then developed within the chamber and allowed to fill it. The smoke from burning *puff-ball* may be admitted into a box, into which a dog or other animal is introduced, and the creature will soon be narcotised.

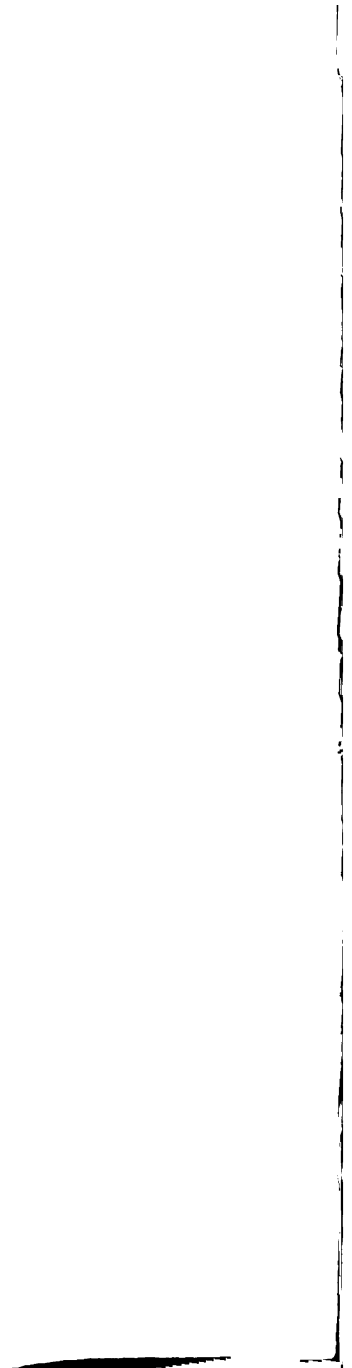
Very commonly horses are made to inhale water vapour by hanging on their heads nose-bags, containing moist bran or hay, to which may be added vinegar or other evaporating fluid.

- |   |                                 |
|---|---------------------------------|
| * a. Urinary bladder.                           | vernous portion of the          |
| b. Ureter (divided).                            | penis (removed).                |
| c. Vesicula seminales.                          |                                 |
| d. Membranous or pelvic portion of the urethra. | g. First, } Curves of penis.    |
| e. Muscular coat of urethra.                    | h. Second, }                    |
| f. Commencement of the ca-                      | i. Third, }                     |
|   | k. Anterior extremity of penis. |
|   | l. Retractor of the penis.      |

Ether and chloroform are used to render animals insensible, and various contrivances have been advocated to make them inhale effectually, so as speedily to get them under the influence of either agent. No method surpasses that of approaching a rag or sponge saturated with ether or chloroform to the nostrils and confining the vapour by covering the head of the operator and the animal's nose with a cloth. It should be remembered that animals cannot live if made to breathe pure chloroform and it is an atmosphere slightly charged with the anæsthetic which is advisable to cause them to inhale. Some operators have thought the best and most convenient plan to give chloroform is to introduce a sponge charged with chloroform in the mouth, keeping the opposite one free. This plan is attended with much inconvenience by irritating the pharyngeal membrane and sometimes suffocating the animal.

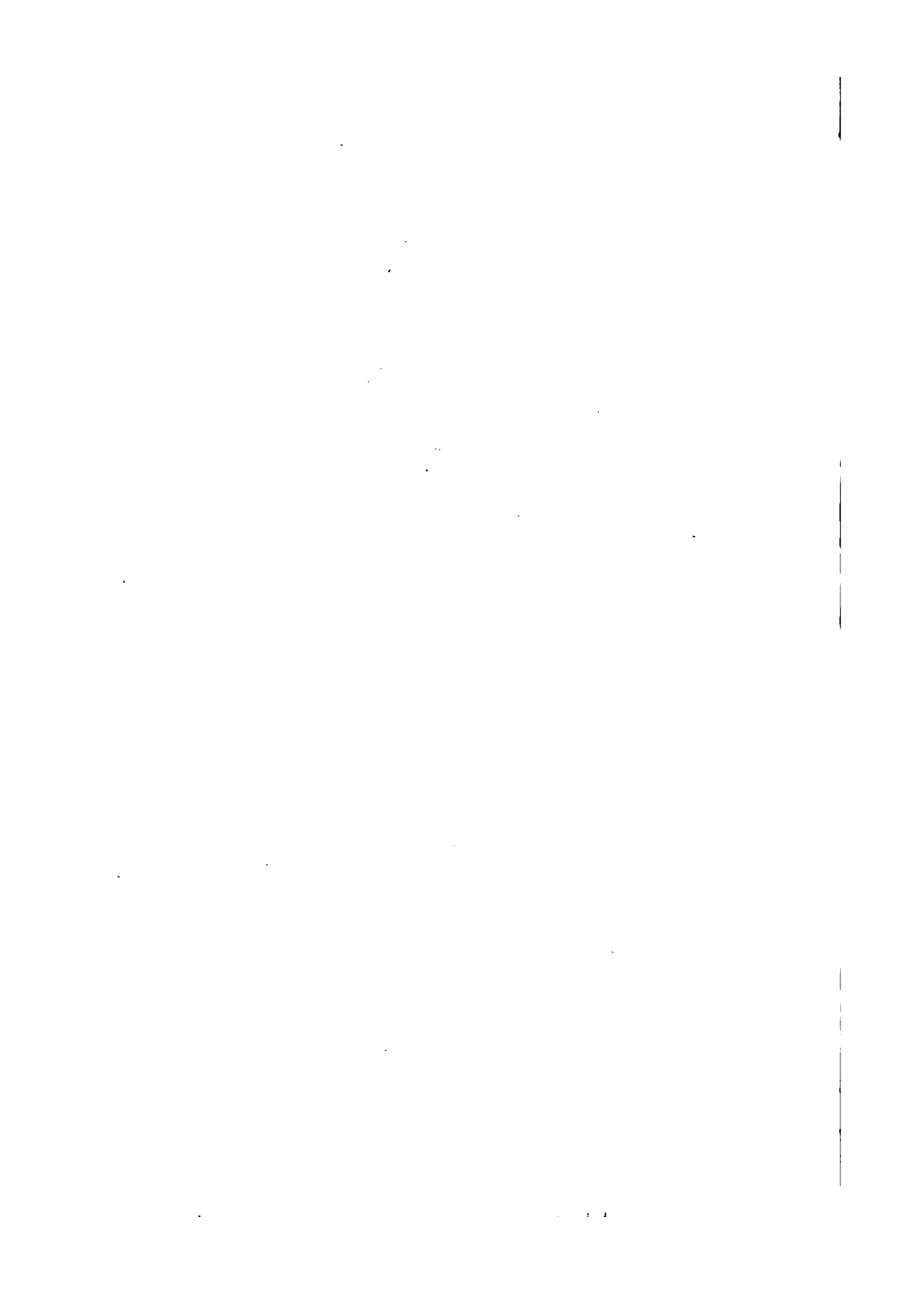








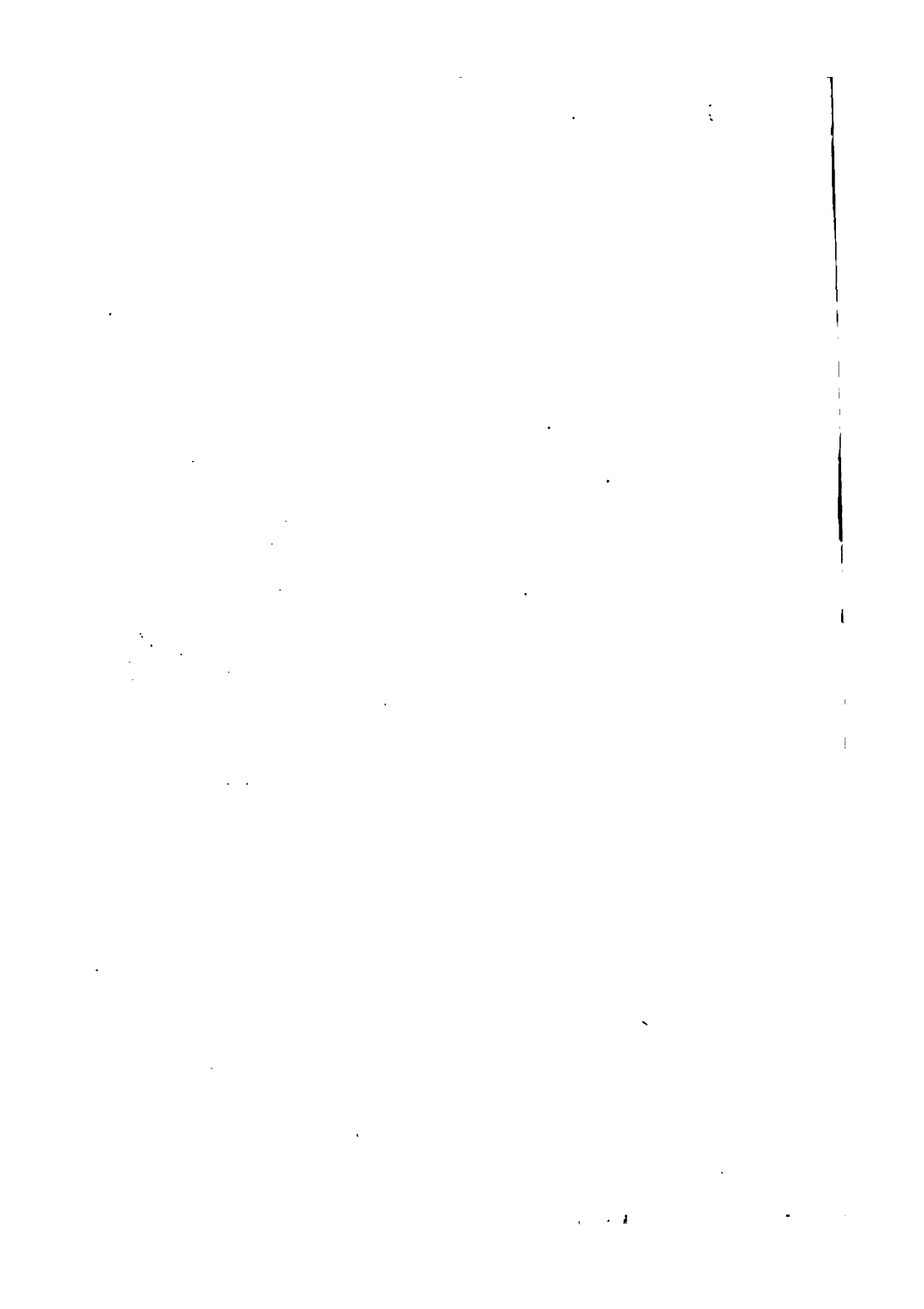
Stark & McFarlane, Edinburgh



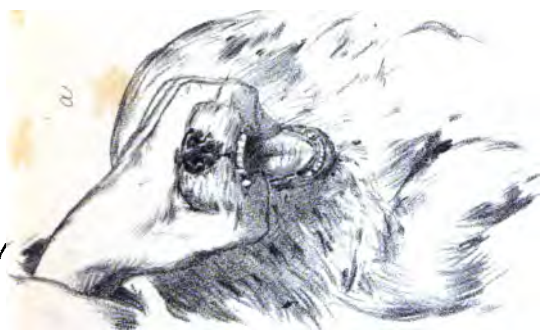
IV.



J. G. Thompson



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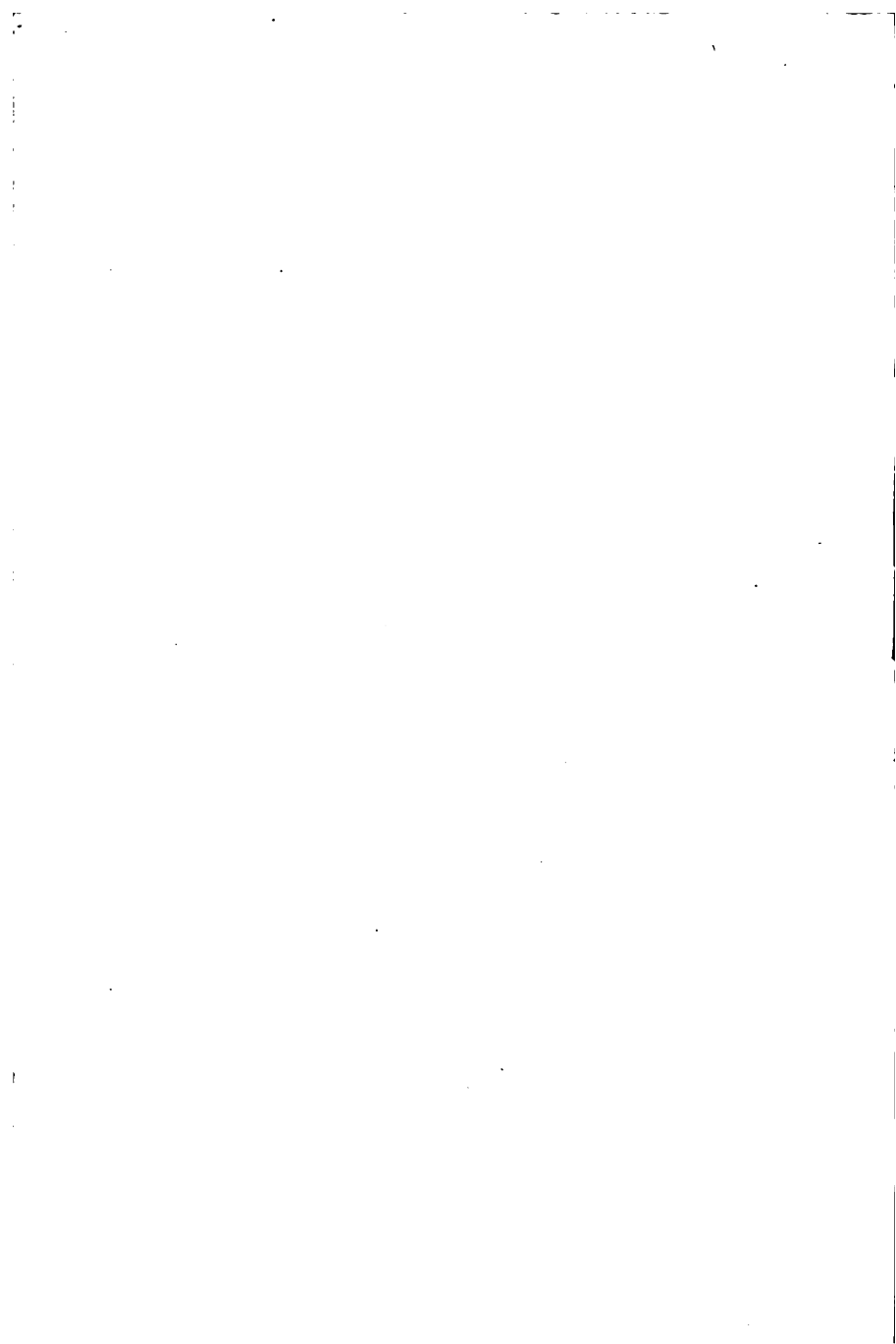


Sketches A. W. Fairbank, Edinburgh.

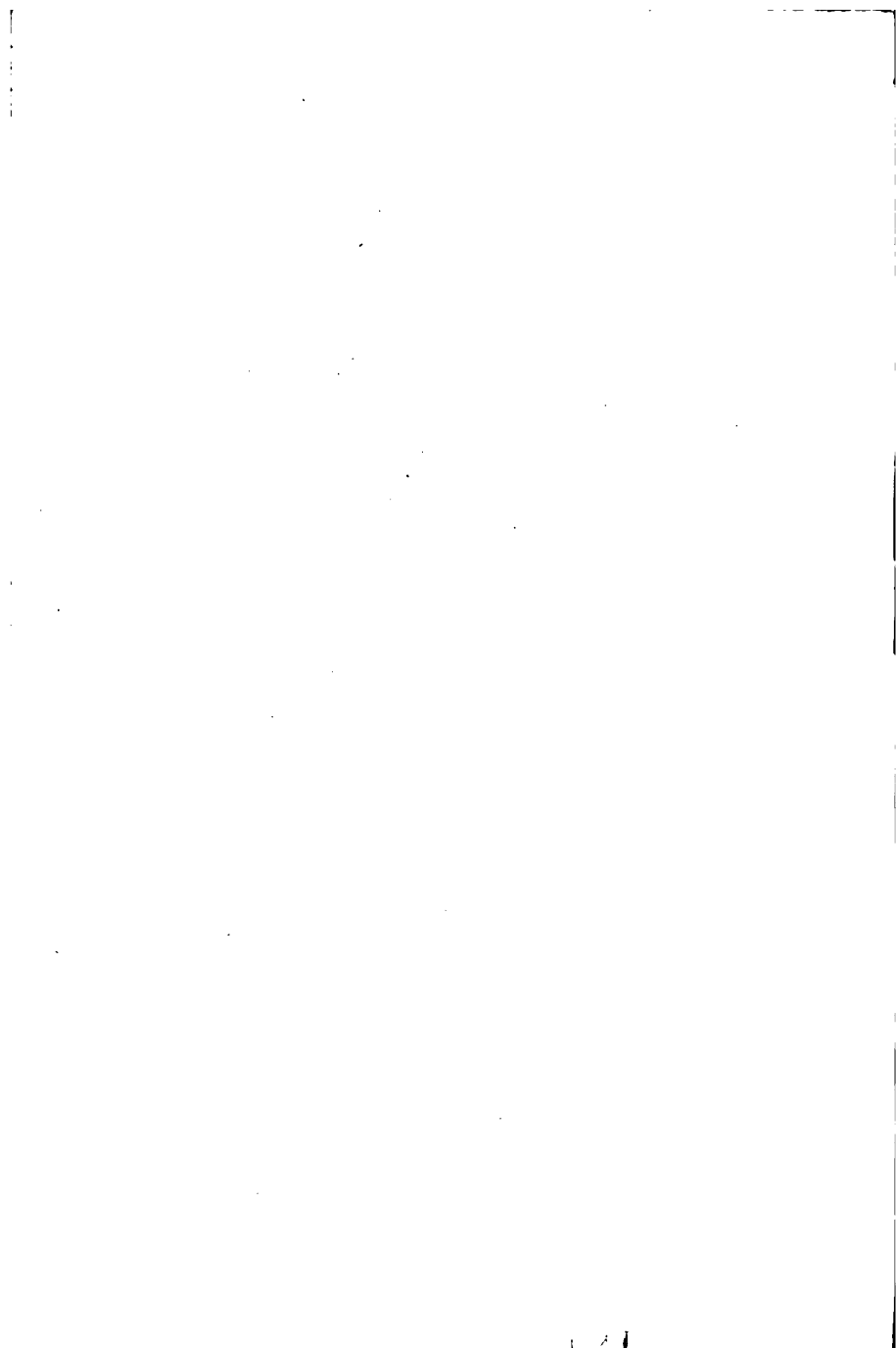
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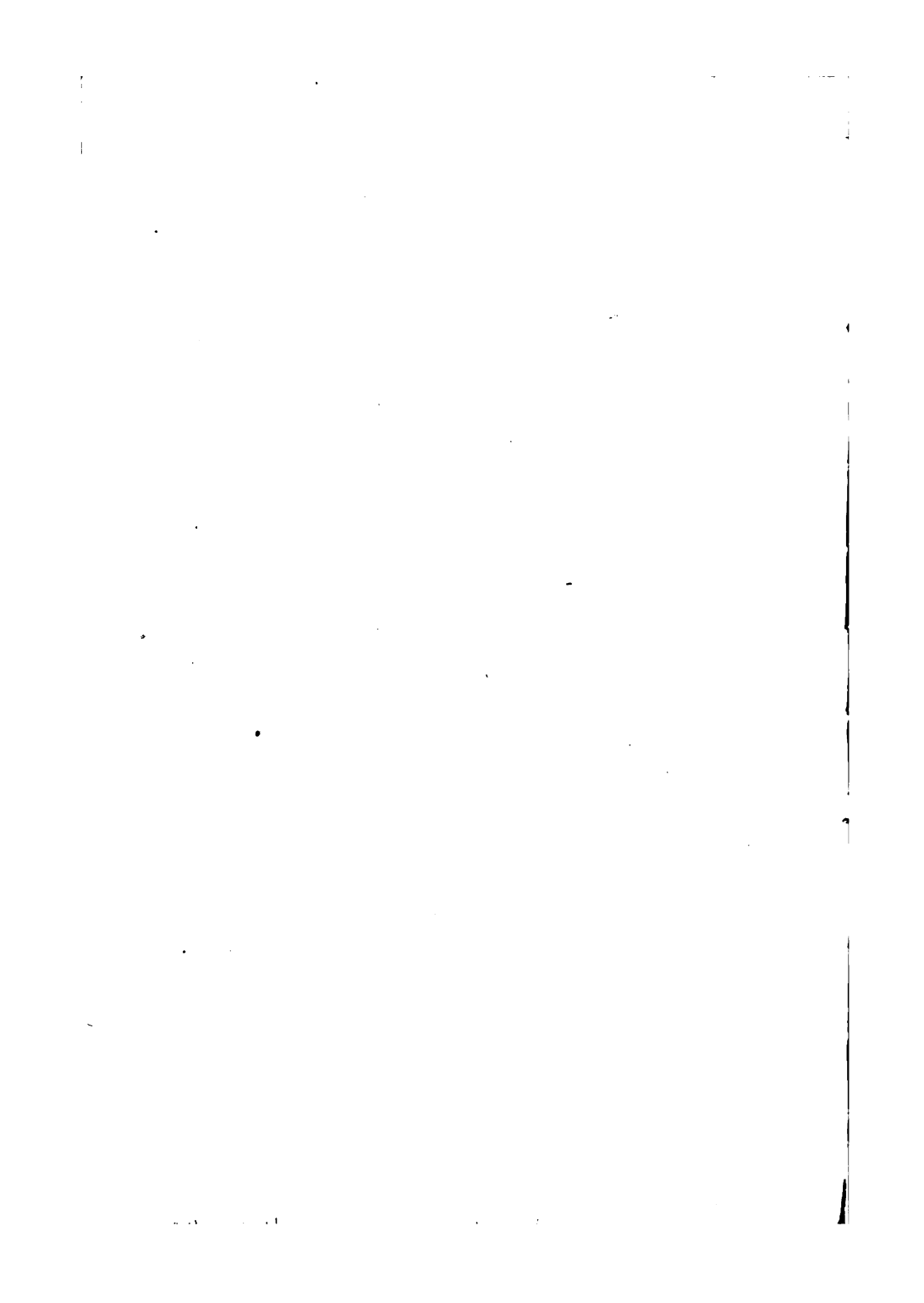




V



Schnee & M. Farano, Reinhardt.







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# VETERINARIAN'S VADE MECUM.

## I. PHARMACOPŒIA VETERINARIA.

### PART I.

#### *Acids (Antalkalines.)*

ACETUM DESTILLATUM. (See Refrigerants.)  
ACIDUM ACETICUM. (Refrigerants.)  
ACIDUM ACETICUM DILUTUM. (Refrigerants.)  
ACIDUM CITRICUM. (Refrigerants.)  
ACIDUM HYDROCHLORICUM DILUTUM.  
(Tonics.)  
ACIDUM NITRICUM DILUTUM. (Tonics.)  
ACIDUM SULPHURICUM DILUTUM. (Tonics.)  
ACIDUM TARTARICUM. (Refrigerants.)

#### *Alkaline Remedies (Antacids.)*

### AMMONIA.

#### 1. LIQUOR AMMONIÆ (Aqua Ammonia.)

See Stimulants.

*Dose.* a.<sup>1</sup>  $\frac{1}{2}$  to 1 fl. oz. ; b.  $\frac{1}{2}$ —2 dr. ; c. 4—16 drops.

<sup>1</sup> To avoid unnecessary repetition in mentioning the doses of medicines, the domestic animals have been classed under three heads. Horse and ox are represented by a. ; sheep, goat, and pig, by b. ; dog and cat, by c.

2. AMMONIÆ SESQUICARBONAS. (Stimulants.)  
*Dose.* a. horse, 2 to 4 dr.; cattle,  $\frac{1}{2}$  to 1 oz.; b.  $\frac{1}{2}$ —1 dr.; c. 10 gr.—1 scr.
3. LIQUOR AMMONIÆ SESQUICARBONATIS. (Stimulants.)  
*Comp.* Am. Sesquicarb. 1 lb., water half a gallon.  
*Dose.* a.  $\frac{1}{2}$ —2 oz.; b.  $\frac{1}{2}$ —2 dr.; c. 4—16 drops.
- a. Spiritus Ammoniae Aromaticus } Stimulants.  
b. Spiritus Ammoniae Foetidus } Antispasmodics.

## CALX.

1. LIQUOR CALCIS (Lime Water.)  
*Comp.* A saturated solution.  $11\frac{1}{2}$  gr. in the pint of water at 60°.  
*Dose.* a.  $\frac{1}{2}$ —2 pints; b. 4—8 oz.; c.  $\frac{1}{2}$ —4 oz.
2. CRETA PRÆPARATA (Chalk livigated by Water.)  
*Dose.* a.  $\frac{1}{2}$ —2 oz.; b. 1—4 dr.; c. 10 gr.—2 dr.
3. PULVIS CRETÆ COMPOSITUS.  
*Comp.* 12 chalk, 4 ginger, 6 acacia, 2 long pepper.  
*Dose.* a. 1—4 oz.; b. 2—4 dr.; c. 1—3 dr.
4. PULVIS CRETÆ COMPOSITUS CUM OPIO.  
*Comp.* 18 pulv. cret. comp. (No. 3), 2 opium.  
*Dose.* a.  $\frac{1}{2}$ —2 $\frac{1}{2}$  oz.; b.  $\frac{1}{2}$ —2 dr.; c. 10 gr.—1 dr.
5. MISTURA CRETÆ.  
*Comp.* Chalk 1 oz., acaciæ  $\frac{3}{4}$ iv., peppermint water 1 pint.  
*Dose.* a.  $\frac{1}{2}$  pint—a quart; b. 4—10 oz; c. 1—3 oz.
6. CONFECTIO AROMATICA. (See Aromatics.)

## MAGNESIA.

1. MAGNESIA (M. usta, Calcined M.)  
*Dose.* a.  $\frac{1}{2}$  to 4 oz.; b. 1—2 dr.; c. 5—20 gr.
2. MAGNESIA CARBONAS (Olim Subcarbonas—Magnesia Alba.) (Purgatives.)

## POTASSA.

## 1. LIQUOR POTASSÆ.

*Comp.* Carb. potassæ  $\text{℥xv.}$ , lime  $\text{℥viiij.}$ , water 1 gall.

*Dose.* a. 1—2 oz.; b. 2—4 dr.; c. 10—20 drops  
(in beer or linseed tea.)

## 2. POTASSÆ CARBONAS (Potassæ Subcarb.)

*Dose.* a. 2—4 dr.; b.  $\frac{1}{2}$ —1 dr.; c. 5—30 gr.

## 3. POTASSÆ BICARBONAS (Potassæ Carb.)

*Dose.* a. 2—4 dr.; b.  $\frac{1}{2}$ —1 dr.; c. 5—30 gr.

## 4. LIQUOR POTASSÆ CARBONATIS.

*Comp.* Carb. pot. 1 oz.; water 1 oz.

*Dose.* a. 1—2 oz.; b. 2—4 dr.; c. 10—40 drops.

## SAPO. (Hard Soap, Soda, and Olive Oil.)

*Dose.* a.  $\frac{1}{2}$  to 2 oz.; b. 1—4 dr.; c. 5—20 gr.

## SODA.

## 1. LIQUOR SODÆ.

*Comp.* Sodæ carb. 31 oz., lime 9 oz., water 1 gall.

*Dose.* a. 1—2 oz.; b. 2—4 dr.; c. 10—20 drops.

## 2. SODÆ CARBONAS (Olim Sodæ Subcarb.)

*Dose.* a. 2—4 dr.; b.  $\frac{1}{2}$ —1 dr.; c. 5—30 gr.

---

*Alteratives (Deobstruents.)*

## ALOES.

*Dose.* a. 1—2 dr.

## ANTIMONIUM.

## 1. ANTIMONII TER-SULPHURETUM. (Black or crude Antimony.)

*Dose.* a. 2—4 dr.

## ARSENIC. (See Tonics.)

## BROMINE.

## 1. POTASSII BROMIDUM.

*Dose.* a. 1—2—4 dr. ; b. 1 scr.—1 dr ; c. 5—10 gr.

## HYDRARGYRUM (Mercury.) (See Purgatives.)

## 1. HYDRARGYRUM CUM CRETA.

*Comp.* 3 mercury, 5 chalk.

*Dose.* c. 5—10 gr.

## 2. PILULA HYDRARGYRI.

*Comp.* 2 mercury, 3 confect. roses, 1 liquorice.

*Dose.* a.  $\frac{1}{3}$ —1 dr.

## 3. HYDRARGYRI CHLORIDUM (Calomel.)

*Dose.* a. 10 gr.— $\frac{1}{2}$  dr. ; b. 5—10 gr. ; c.  $\frac{1}{2}$ —2 gr.

## 5. HYDRARGYRI BICHLORIDUM (Corrosive Sublimate.)

*Dose.* a. 3—6 gr.

## 6. LIQUOR HYDRARGYRI BICHLORIDI.

*Comp.* Bichlor. of merc., hydrochlorate of ammonia,  
of each 20 gr. ; water 20 oz.

*Dose.* a. 2—8 oz. ; b. 1 dr.—1 oz., in linseed tea.

## 7. HYDRARGYRUM IODIDUM.

*Comp.* 8 mercury, 5 iodine.

*Dose.* a. 1 dr.— $1\frac{1}{2}$  dr., made into a ball with common mass.

## 8. HYDRARGYRI BISULPHURETUM (Cinnabar, Red Sulphuret.)

*Dose.* a. 1 dr.—4 dr.

9. HYDRARGYRI NITRICO-OXYDUM. Red Precipitate.  
(See Part II.)

## 10. UNGUENTUM HYDRARGYRI. (See Part II.)

## 11. UNGUENTUM HYDRARGYRI NITRATIS. (See Part II.)

## 12. UNGUENTUM HYDRARGYRI NITRICO-OXYDI. (See Part II.)

## 13. UNGUENTUM HYDRARGYRI IODIDI. (See Part II.)

## IODINIUM (Iodine.)

*Dose.* a. 1—4 scr. ; b. 5—15 gr. ; c. 3—8 gr.

## 1. TINCTURA IODINII COMPOSITA.

*Comp.* Iod.  $\frac{1}{2}$  dr., iod. of pot. 1 dr., sp. rect.  $2\frac{1}{2}$  oz.*Dose.* a.  $\frac{1}{4}$ —1 oz.; b. 2—4 dr.; c. 1—2 dr.

## 2. IODIDUM HYDRARGYRI. (See Hydrarg.)

## 3. SYRUPUS FERRI IODIDI.

*Comp.* Iodide of iron, syrup and water.*Dose.* b. 1—2 oz.; c. 1—4 dr.

## 4. POTASSII IODIDUM.

*Dose.* a. 2—4 dr.; b. 1—3 scr.; c. 3—20 gr.

## 5. SULPHURIS IODIDUM.

*Dose.* a.  $\frac{1}{2}$ —1 dr.; c. 5—10 gr.

## 6. PLUMBI IODIDUM.

*Dose.* a. 1— $1\frac{1}{2}$  scr.; c. 1—2 gr.

## 7. UNGUENTUM PLUMBI IODIDI. (See Part II.)

## 8. UNGUENTUM IODINII COMPOSITUM. (See Part II.)

## 9. UNGUENTUM HYDRARGYRI IODIDI. (See Part II.)

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*Anthelmintics.*

## ANTIMONII POT. TART.

*Dose.* a. 1—4 dr.

## ASPIDIUM. (Felix Mas. The male Fern. The root.)

*Dose.* a. 1 pound of the powder; b. 3—5 oz.; c. 2 oz. of ditto—in water.*Note.*—A decoction may be made; and a few hours after its administration, a brisk cathartic exhibited.

## GRANATI RADIX. (Punica Granatum. Pomegranate. Bark.)

*Dose.* a. 5—6 oz.; b. 1—2 oz.; c.  $\frac{1}{2}$ —4 dr.

(Powdered. Two or three times daily.)

## 1. DECOCTUM GRANATI RADICIS.

*Comp.* Gran. rad. 2 oz., water  $1\frac{1}{2}$  pints, red. to 1 pint.*Dose.* a. 1—3 quarts; b.  $\frac{1}{2}$  to 1 pint; c. 2—4 oz.

## OLEUM TEREBINTHINÆ. (See Diuretics.)

*Dose and Form.* a.  $\frac{1}{2}$ —1 pint; b. 1—2 oz.; c. 4 dr.  
In linseed oil, or in aromatic water.

*Note.*—Turpentine in small doses is very useful against the *filaria bronchi*; but large doses are, in my opinion, strongly to be guarded against, as inflammation of the alimentary canal or kidneys may supervene.

*From other Classes.*

## ANTACIDS—

Carb. sodæ.  
Liquor calcis.  
Liquor Potassæ.

## PURGATIVES—

Aloes.  
Calomel.  
Castor oil.  
Croton.  
Gamboge, 3ss. dose for dog.  
Jalap.  
Sulphates of Magnesia and Soda.

## TONICS—

Bitters.  
Steel.  
Sulphuret of Iron.

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*Antispasmodics.*

ÆTHER. (See Stimulants.)

ACIDUM HYDROCYANICUM. (See Narcotics.)

AMMONIA. (See Stimulants.)

ASSAFETIDA. (Gum resin of Ferula A.)

*Dose and Form.* a. 2—4 dr.; b. 1—2 dr.; c. 10—30  
gr. in pill or emulsion; in water as enema.

## 1. Tinct. Assafœtida.

*Comp.* Ass.  $2\frac{1}{2}$  oz., rect. spir. 20 oz.

*Dose.* a. 2—4 oz.; b. 1—2 oz.; c. 2—4 dr.

## 2. SPIRITUS AMMONIÆ FÆTIDUS.

*Comp.* Spiritus Ammoniæ and Assafœtida.

*Dose.* a.  $\frac{1}{2}$ —1 oz.; b. 2—4 dr.; c.  $\frac{1}{2}$ —2 dr.

## CAMPHORA. (Laurus C. A peculiar concrete.)

*Dose.* a. 1—4 dr.; b.  $\frac{1}{2}$ —2 dr.; c. 5—20 gr.

## VALERIANA. (Root of V. Officinalis.)

*Dose.* a. 2—4 oz.; b.  $\frac{1}{2}$ —1 $\frac{1}{2}$  oz.; c. 1—2 dr. In the cat it is recommended in doses of 1—2 scr.

## 1. TINCTURA VALERIANÆ.

*Comp.* Valerian  $2\frac{1}{2}$  oz., proof sp. 20 oz.

*Dose.* a.  $\frac{1}{2}$ —1 pint; b. 3—6 oz.; c. 1—2 oz.

## 2. TINCTURA VALERIANÆ COMPOSITA.

*Comp.* Valerian  $2\frac{1}{2}$  oz., Aromat. sp. of Ammonia 20 oz.

*Dose.* a.  $\frac{1}{2}$ —2 oz.; b. 2 dr.—1 oz.; c. 1—2 dr.

*Aromatics. Aromatic Stimulants.*

## CAPSICUM (C. fastigiatum. Cayenne Pepper. The berry.)

*Form and Dose.* Powder, 1 scr.—1 dr.; b. 5—20 gr.; c. 2—10 gr.

## 1. TINCTURA CAPSICI.

*Comp.* Caps. 5 dr., spirit 20 oz.

*Dose.* a.  $\frac{1}{2}$ —1 oz.; b. 1—4 dr.; c. 20 dr.—1 dr.

## CARDAMOMUM. (Alpinia C. The seeds.)

*Form and Dose.* a. 2 dr.—2 oz.; b. 2—4 dr.; c. 1—2 dr., in powder.



## 1. TINCTURA CARDAMOMI COMPOSITA.

*Comp.* Cardamoms, carui seeds, and cochineal, of each  $2\frac{1}{2}$  dr.; cinnamon 5 dr., raisins 5 oz., proof spirit 4 oz.

*Dose.* a. 1—2 oz.; b.  $\frac{1}{2}$ —1 oz.; c. 1—2 dr.

## CONFECTIO AROMATICA.

*Comp.* 1 cinnamon, 1 nutmegs, 1 saffron,  $\frac{1}{2}$  cloves,  $\frac{1}{4}$  cardamoms, 8 chalk, 3 sugar.

*Dose.* a.  $\frac{1}{2}$ —2 oz.; b. 2—4 dr.; c. 10 gr.—1 dr. in bolus or mixture.

*Incomp.* Acids, Metallic Salts.

## PIMENTA. (Eugenia P. Allspice. The unripe berries.)

*Dose.* a.  $\frac{1}{2}$ —1 oz.; b. 1—2 dr.; c. 10 gr.—1 dr.

## 1. AQUÆ PIMENTÆ.

*Comp.* Pimenta 1 pound, water 2 galls., distil to 1; or by rubbing up 2 drachms of the oil of Pimento with sand in a gallon of water.

*Dose.* a. 6—20 oz.; b. 4—10 oz.; c. 1—2 oz. (A useful vehicle and a flavourer.)

## PIPER LONGUM. (Long Pepper. The unripe fruit.)

*Dose.* a. 2—4 dr.; b. 1—2 scr.; c. 5—20 gr.

## PIPER NIGRUM. (Black Pepper. The unripe fruit.)

*Dose.* a. 2—4 dr.; b. 1—2 scr.; c. 5—20 gr.

## SINAPIS. (S. Nigra et alba. Mustard Seed.)

*Form and Dose.* Mustard whey (bruised seeds or powder  $\frac{1}{2}$  oz., milk 2 oz.—strain), a. 1—2 pints; b. 6—10 oz.

## ZINGIBER. (Z. Officinale. The rizoma or root.)

*Dose.* Powder, a.  $\frac{1}{2}$ —4 oz; b. 2—4 dr.; c. 2—3 scr.

1. TINCTURA ZINGIBERIS.

*Comp.* Ginger  $2\frac{1}{2}$  oz., rect. spirit 40 oz.

*Dose.* a. 2—4 oz.; b. 1—2 oz.; c. 2—4 dr.

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*Aromatic Bitters. Stimulant Bitters.*

ABSINTHIUM. (Artemisia A.) Wormwood. (The flowering summits.)

*Dose.* a. 1—2 oz.; b.  $\frac{1}{2}$ —1 oz.; c. 1—4 dr.

*Incomp.* sulphates of iron and zinc.

ANTHEMIS. (A. Nobilis. Chamomile flowers.)

*Dose and Form.* Powder, a. 1—3 oz.; b.  $\frac{1}{2}$ —2 oz.

1. INFUSUM ANTHEMIDIS.

*Comp.* Chamomile 10 dr., water 20 oz.

*Dose.* a. 10 oz.—2 pints; b. 2—6 oz.; c. 1—2 oz.

2. OLEUM ANTHEMIDIS.

*Dose.* c. 2—8 drops.

AURANTII CORTEX. (Citrus Bigaradia. Orange. The peel.)

*Dose.* a.  $\frac{1}{2}$  oz.; b. 1 dr.; c. 1 scr.— $\frac{1}{2}$  dr.

CASCARILLA. (Croton Eleutheria. The bark.)

*Dose.* Powder, a. 1—2 oz.; b. 1 dr.—4 dr.; c.  $\frac{1}{2}$ —2 dr.

1. INFUSUM CASCARILLÆ.

*Comp.* Casc.  $1\frac{1}{2}$  oz., boiling water 20 oz.

*Dose.* a. 1—2 pints; b. 2—4 oz.; c. 1—2 oz.

2. TINCTURA CASCARILLÆ.

*Comp.* Casc.  $2\frac{1}{2}$  oz., proof sp. 20 oz.

*Dose.* a. 2—4 oz.; b.  $\frac{1}{2}$ —1 oz.; c. 1—2 dr.

*Astringents.*

ACIDUM SULPHURICUM DILUTUM. (See Tonics, Refrigerants.)

ACIDUM ACETICUM. (Refrigerants.)

ACIDUM GALLICUM. (Gallic Acid, from galls : crystals. Soluble in 100 parts of cold water.)

*Dose.* a. 1 scr.— $1\frac{1}{2}$  dr.; b. 2—20 gr.; c. 1—4 gr. in form of pill, solution or tincture.

ACIDUM TANNICUM. (Tannic Acid, from galls.) (Very soluble in water.)

*Dose.* a. 1 scr.— $1\frac{1}{2}$  dr.; b. 2—20 gr.; c. 1—4 gr.

ALUMEN. (Alum, sulphate of alumina and potassa.)

*Dose.* a. 2—4 dr.; b. 1 scr.—1 dr.; c. 10—20 gr.

*Form.* Solution (in aromatic water, an oz. of water dissolves  $\frac{1}{2}$  oz.), bolus, powder.

*Note.*—Alum whey: boil powdered alum 2 dr. in a pint of milk, and strain.

*Incomp.* Alkalies and their carbonates, tartrate of potash, vegetable astringents.

ARGENTI NITRAS. (See Tonics.)

BORAX. (Sodæ Biboras.)

*Dose.* c. 10—40 gr.

1. MEL BORACIS.

*Comp.* Borax 1 dr., honey 1 oz.

*Form.* As a local application to mouth and throat.

CATECHU. (Acacia Catechu. Extract of the wood.)

*Dose.* a. 2—6 dr.; b. 1—3 dr.; c. 10—40 gr.

*Form.* Powder, mixture, bolus.

*Incomp.* Alkaline salts destroy its astringency.

## 1. INFUSUM CATECHU COMPOSITUM.

*Comp.* Catechu 6 dr., cinnamon 1 dr., water 20 oz.

*Dose.* a. 10 oz.—1 pint; b. 2—6 oz.; c. 1—2 oz.

## 2. TINCTURA CATECHU COMPOSITA.

*Comp.* Catechu  $3\frac{1}{2}$  oz., cinnamon  $2\frac{1}{2}$  oz., proof spirit 40 oz.

*Dose.* a. 2—6 oz.; b. 1—2 oz.; c.  $\frac{1}{2}$ —2 dr. in chalk mixture or other liquids.

## CINCHONA. (See Tonics.)

## CUPRI SULPHAS.

*Dose.* a. 1—2 dr.

## FERRUM. (See Tonics.)

## GALLÆ. (Oak Galls, Gemmæ Morbidæ.)

*Form and Dose.* Powder: a. Horse, 4—6 dr.; ox,

1—2 oz.; b. 1 scr.—1 dr.; c. dog, 5—10 gr.; cat, 1—3 gr.

1. DECOCTUM GALLÆ. Galls  $2\frac{1}{2}$  oz., water 2 pints (boil to 1 pint.)

*Dose.* a. 10 oz. to  $1\frac{1}{2}$  pint; b. 2—4 oz.; c. 1—2 oz.

## 2. TINCTURA GALLÆ.

*Comp.* Galls  $2\frac{1}{2}$  oz., proof spirit 20 oz.

*Dose.* 1—4 oz.; b. 2—4 dr.; c.  $\frac{1}{2}$ —2 dr.

*Incomp.* Metallic salts, cinchona.

KINO. (Indurated juice of *Pterocarpus erinaceus*.)

*Dose.* Powder, 4—6 dr.; b. 1 scr.—1 dr.; c. 2—6 gr.

*Incomp.* Acids, alkalies, sulphate of iron.

## 1. TINCTURA KINO.

*Comp.* Kino  $3\frac{1}{2}$  oz., rectified spirit 40 oz.

*Dose.* a. 1—2 oz.; b.  $\frac{1}{2}$ —1 oz.; c. 1—2 dr., with chalk mixture.

OPIUM. (See Narcotics.)

PLUMBI ACETAS.

*Dose.* *a.* 1—3 scr.; *b.* 5—10 gr.; *c.* 1—4 gr.

*Form.* Bolus with opium; solution with vinegar and distilled water.

*Incomp.* Sulphuric acid, sulphates, liq. ammoniæ, acetatis, etc.

QUERCUS. (Q. pedunculata. The oak. The bark.)

*Dose.* Powder, *a.* 1—4 oz.; *b.*  $\frac{1}{2}$ —1 oz.; *c.* 2—4 dr.

1. DECOCTUM QUERCUS.

*Comp.* Oak bark 10 dr., water 40 oz., red. to 20 oz.

*Dose.* *a.* 1—2 pints; *b.* 4—6 oz.; *c.* 1—3 oz.

ZINCUM.

1. ACETAS ZINCI.

*Dose.* *a.*  $\frac{1}{2}$ —2 dr.

2. SULPHAS ZINCI. (Tonics, Emetics.)

*Dose.* *a.* 1—3 dr.; *c.* 1—3 gr. Much used externally.

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*Carminatives.*

ANETHUM. (A. Graveolens. Dill. The fruit.)

*Dose.* *a.*  $\frac{1}{2}$ —2 oz.; *b.* 2—3 dr.; *c.* 5 gr.— $\frac{1}{2}$  dr.

ANISUM. (Pimpinella A. Anise. The seed.)

*Dose.* *a.* 1—3 oz.; *b.* 2—4 dr.; *c.* 10 gr.—1 dr.

OLEUM ANISI.

*Dose.* *a.* 1—2 dr.; *b.* 5—15 drops; *c.* 1—6 drops.

## 1. SPIRITUS ANISI.

*Comp.* Oil of Anise 4 dr., proof-spirit 1 gallon.

*Dose.* a. 1—4 oz.; b. 2—6 dr.; c. 1—2 dr.

## CARUI. (Carum C. Caraway. The seeds.)

*Dose.* Powder, a.  $\frac{1}{2}$ —2 oz.; b. 2—6 dr.; 10—40 gr.

## CORIANDRUM. (C. Sativum. Coriander. The seeds.)

*Dose.* Powder, a.  $\frac{1}{2}$ —1 $\frac{1}{2}$  oz.; b. 2—6 dr.; c. 10—40 gr.

## FENICULUM. (F. Dulce. Fennel. The seeds.)

*Dose.* a. 1—2 oz.; b. 2—4 dr.; c. 10 gr.—1 dr.

## FENICULI OLEUM.

*Dose.* a.  $\frac{1}{2}$ —1 dr.; b. 10—15 drops; c. 2—5 drops.

## LAVANDULÆ OLEUM. (Oil of L. vera. Lavender.)

*Dose.* a.  $\frac{1}{2}$ —1 dr.; b. 10—15 drops; c. 2—5 drops.

## 1. TINCTURA LAVANDULÆ COMPOSITA. (Red Lavender.)

*Comp.* Oil of Lavender 1 $\frac{1}{2}$  dr., oil of rosemary 10 drops, cinnamon and nutmeg aa 2 $\frac{1}{2}$  drachms, Pterocarpus (red saunders) 5 drachms, rectified spirit 2 pints.

*Dose.* a.  $\frac{1}{2}$ —2 oz.

## MENTHA PIPERITA. (Peppermint.)

*Dose.* a.  $\frac{1}{2}$ —1 $\frac{1}{2}$  oz.; b. 2—4 dr.; c. 5—30 gr.

## OLEUM MENTHÆ PIPERITÆ.

*Dose.* a. 20 drops; b. 5—8 drops; c. 3 drops.

## 1. AQUA MENTHÆ PIPERITÆ.

*Comp.* Peppermint dried 2 pounds, water 2 gallons (distil. 1 gall.); or, oil of pep. 2 dr., sand 2 dr., water 1 gall.

*Dose.* a. 6—10 oz.; b. 2—5 oz.; c. 1—2 oz.

*Diaphoretics.***AMMONIÆ SESQUICARBONAS.** (See Refrigerants.)

*Dose.* a. 2—6 dr.; b. 1 scr.—1 dr.; c. 3—6 gr.

1. **LIQUOR AMMONIÆ ACETATIS.** (Refrigerants.)

*Comp.* Amm. sesq. carb. 9 dr. (vel q. s.), acidi acetici diluti, 20 oz.

*Dose.* a. 3—6 oz.; b. 1—2 oz.; c. 2—4 dr.

*Incomp.* Acids, potass, sugar.

**ANTIMONIUM.** (See Emetics.)1. **Antimonii potassio-tartras.** (Tartar Emetic.)

*Dose.* a. 1—4 dr., oft repeated; c. 1—4 gr.

**IPECACUANHA.** (Cephaelis I. The root.)

( See **EMETICS, EXPECTORANTS.**) The powdered root.

*Dose.* Pig, 20—30 gr.; dog, 10—20 gr.; cat, 5—12 gr.

1. **PULVIS IPECACUANHÆ COMPOSITUS.** (Imitation of Dover's Powder.)

*Comp.* 1 ipecacuan, 1 opium, 8 sulphate of potass (10 grains contain 1 gr. of opium.)

*Dose.* Horse, 1—2 dr.; dog, 10—15 gr.

2. **VINUM IPECACUANHÆ.**

*Comp.* Ipecacuanha  $2\frac{1}{2}$  oz., sherry 40 oz.

*Dose.* Dog, 10 drops—1 dr.

**SULPHUR PRECIPITATUM.**

*Dose.* a.  $\frac{1}{2}$ —1 oz.; b. 2—4 dr.; c.  $\frac{1}{2}$ —1 dr., sprinkled over food, or as an electuary, or suspended in milk or gruel.

*Diluents, Demulcents, Emollients, Ptisans.*

ACACIA. (Exudation from various species of Acacia, Gum Arabic.)

*Dose.* a. 1—2 oz.; b. 4 dr.; c. 10—40 gr.

*Form.* Powder, mixture.

*Incomp.* Acet. plumb., æther, spirits.

1. MISTURA ACACIÆ. (Mucilago Acaciæ.)

*Comp.* Acacia 10 oz., boiling water 20 oz.

*Dose.* a. 2—6 oz.; b. 1—3 oz.; c. 1 dr.—1 oz.

*Incomp.* Acet. plumb., æther, tinctures.

ALTHÆA. (A. officinalis, Marshmallow. The root.)

*Form.* Decoction. (A. 1½ oz., water 20 oz.)

*Dose.* Ad libitum.

AMYLUM. (Fecula sem. tritici. Starch.)

*Form.* Powder (externally); mixed in water.

1. DECOCTUM AMYLI. (Mucilago amyli, starch emulsion.)

*Comp.* Amylum ½ oz., water 20 oz.

*Dose.* Ad libitum.

*Incomp.* Preparations of iodine.

AVENA. (A. Sativa. The common Oat. The decorticated seed, grits.)

*Form.* Grits; also the meal in decoction, poultice, etc.

GLYCYRRHIZA. (G. Glabra. Common Liquorice. The root, recent and dried.)

*Form and Dose.* Decoction (root cont. 1½ oz., water 20 oz.) ad libitum.



**HORDEUM.** (*H. distichon*. Barley. The decorticated seeds.)

1. **DECOCTUM HORDEI.** (Barley Water.)

*Dose.* Ad libitum.

**LINI SEMEN.** (*L. Usitatissimum*. Common Linseed. The seeds.)

**LINI OLEUM.** (Linseed Oil.) (See purgatives.)

*Dose.* a. 4—8 oz.; b. 1—2 oz.; c. 2—4 dr.

**MEL.** (Honey. *Apis Mellifica*.)

1. **OXYMEL.** (Simple Oxymel.)

*Comp.* Honey 5 pounds, acetic acid 7 oz., water 8 oz.

*Dose.* a. 2—4 oz.; b. 1—2 oz.; 1 dr.—1½ oz.

**OLIVÆ OLEUM.** (*Olea Europæa*. Expressed oil of the fruit, Olive Oil.)

*Dose.* a. 4—8 oz.; b. 1—2 oz.; c. 2—4 dr.

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*Diuretics.*

**CANTHARIS.** (*Cantharis Vesicatoria*. Spanish Fly.)  
See Stimulants.

*Dose.* Horse, 4—20 gr.; cattle, 1—2 scr.; for sheep and swine, 2 to 8 gr.; and for dogs, ½ to 3 gr.

1. **ACETUM CANTHARIS.** (See Part II.)

2. **TINCTURA CANTHARIDIS.**

*Comp.* Canth. 2 dr., proof sp. 20 oz.

*Dose.* a. ½—1 oz.; b. 1—3 dr.; c. 10—40 drops.

**COLCHICUM.** (C. Autumnale. Cormus and seeds.)

*Dose.* a.  $1\frac{1}{2}$ —2 dr.; c. 2—8 gr. of powdered corm or seeds.

**DIGITALIS.** (D. Purpurea. The stem-leaves, recent and dried.)

*Dose.* a. 1 scr.—2 dr.; b. 5—17 gr.; c. 1—4 gr.

**JUNIPERUS.** (J. Communis. Juniper. The berries.)

*Dose.* a. 3—4 oz.; b. 4 dr.—1 oz.; c.  $\frac{1}{2}$  to  $1\frac{1}{2}$  dr.

**JUNIPERI OLEUM.** (Oil distilled from the berries.)

*Dose.* a.  $\frac{1}{2}$  dr.; c. 4 drops.

**POTASSA.** (Antacids, Alkalines.)

## 1. POTASSÆ ACETAS.

*Dose.* a. 3—6 dr.; b. 1—2 dr.; c. 10—40 gr.

*Incomp.* Most acids and neutral salts.

## 2. POTASSÆ CARBONAS. (Olim. Pot. Subcarb.)

*Dose.* a. 4—8 dr.; b. 20 gr.—1 dr.; c. 10—30 gr.

## 3. POTASSÆ BICARBONAS. (Olim. Pot. Carb.)

*Dose.* a. 4—8 dr.; b. 20 gr.—1 dr.; c. 10—30 gr.

## 4. POTASSÆ NITRAS. Nitre. (See Refrigerants.)

*Dose.* a.  $\frac{1}{2}$ —1 oz.; b.  $\frac{1}{2}$ —2 dr.; c. 5—30 gr.

## 5. POTASSÆ TARTRAS. (See Purgatives.)

*Dose.* a.  $\frac{1}{2}$ —1 oz.; b. 20 gr.—2 dr.; c. 10—30 gr.

## 6. POTASSÆ BITARTRAS. (Cream of Tartar.)

*Dose.* a.  $\frac{1}{2}$ —1 oz.; b. 20 gr.—2 dr.; c. 10—30 gr.

## 7. POTASSÆ CHLORAS.

*Dose.* a. 1—2 dr.; b. 1—2 scr.

## 8. POTASSÆ SULPHAS.

*Dose.* a. 1—3 oz.; b.  $\frac{1}{2}$ —1 oz.; c. 1 scr.—2 dr.

**SCILLA.** (S. Maritima. Squills, Recent bulb.)*Dose.* c. 10—30 gr.1. **TINCTURA SCILLÆ.***Comp.* Squill  $2\frac{1}{2}$  oz., proof spir. 20 oz.*Dose.* c. 1 scr.— $1\frac{1}{2}$  dr.**SPIRITUS ÆTHERIS NITRICI.** (Sp. of Nit. Ether.

Sweet Spirits of Nitre.)

*Dose.* a. 1—2 oz.; b. 1—2 dr.; c. 2 scr.—1 dr.*Incomp.* Sulphas. ferri.**TEREBINTHINA.** (Pinus Palustris et P. tæda. T.

Vulgaris.) Common Turpentine.

*Dose.* a.  $\frac{1}{2}$ —1 oz.**TEREBINTHINÆ OLEUM.***Dose* a. 2—4 dr.; b.  $\frac{1}{2}$ —1 dr.

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*Emetic.***ANTIMONIUM.**1. **ANTIMONII POTASSIO-TARTRAS.** (Diaphoretics).*Dose.* Pig, 4—12 gr.; dog, 2—6 gr.; cat, 1—4 gr.2. **VINUM ANTIMONII POTASSIO-TARTRATIS.** (Vinum Antimonii).*Comp.* 2 scr. of ant. pot. tart. in 20 oz. of sherry.*Dose.* Dog, 1—2 oz.; cat,  $\frac{1}{2}$ — $1\frac{1}{2}$  oz.*Incomp.* Bitter and astringent infusions. Alkalies and their carbonates.**IPECACUANHA.** (See Diaphoretics).1. **PULVIS IPECACUANHÆ.***Dose.* Dog, 15—30 gr.; cat, 5—12 gr.

## 2. VINUM IPECACUANHÆ.

*Comp.* 10 dr. of ipec. in 20 oz. of sherry wine.

*Dose.* c.  $\frac{1}{2}$  dr.—1 dr. every quarter of an hour.

## VERATRUM (White Hellebore). (See Cathartics.)

*Form and Dose. Powder:* Pig, 5—15 gr.; c.  $\frac{1}{2}$ —1 gr.

## 1. VINUM VERATRI.

*Comp.* White hellebore 4 oz., sherry 20 oz.

*Dose.*  $\frac{1}{2}$  dr.— $\frac{1}{2}$  oz., injected in jugular vein of horse.  
excites emesis.

## ZINCI SULPHAS (White Vitriol.)

*Dose.* Pig, 10—15 gr.; dog, 2—5 gr.—in about  
100 parts of lukewarm water.

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*Emmenagogues.**Agents which excite Uterine Contractions.*

## ERGOTA. (Secale Cereale. Spurred Rye.)

*Dose. Powder:* a.  $\frac{1}{2}$ —1 oz.; b. 1—2 dr.; c. 10 gr.—  
1 dr.—in warm water.

## 1. TINCTURA ERGOTÆ ÆTHEREA.

*Comp.* Ergot 2 $\frac{1}{2}$  oz., æther 20 oz.

*Dose.* a. 1—2 oz.; b.  $\frac{1}{2}$ —1 oz.; c.  $\frac{1}{2}$ —2 dr.

## RUTA. (Ruta Graveolens. Rue. The leaves.)

*Dose. Powder:* a.  $\frac{1}{2}$ —1 oz.

## SABINA. (Juniperus S. Savin. The tops.)

*Dose. Powder:* a.  $\frac{1}{2}$ —1 oz.—in infusion or draught.

*From Other Classes.*

ALoes.  
CANTHARIS.  
FERRUM.  
HELLEBORUS NIGER.  
IODINIUM.  
SINAPIS.

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*Expectorants.*

ANTIMONII POTASSIO TARTRAS. (See Emetics,  
Diaphoretics.)

*Dose.* a. 1—4 dr.; c.  $\frac{1}{2}$ — $\frac{1}{4}$  gr.

ASSAFŒTIDA. (See Antispasmodics.)

GUAIAIACUM. (Resin from the wood of the Guaiacum  
Officinale.)

*Dose.* a. 1—4 dr.

IPECACUANHA. (See Emetics.)

*Dose.* c.  $\frac{1}{2}$ —2 gr.

SCILLA. (See Diuretics.)

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*Narcotics. Sedatives. Soporifics. Anodynes.*

ÆTHER. (See Stimulants.)

**ACIDUM HYDROCYANICUM DILUTUM.**

*Comp.* Real hydrocyanic acid and water.

*Dose.* a.  $\frac{1}{2}$ —1 dr.; b. 5—10 drops; c. 2—5 drops.

*Incomp.* Metallic oxides and carbonates.

**ACONITI FOLIUM. (A. Napellus. Wolfsbane.)**

*Dose.* Of the powder. a. 1—4 dr.

**ACONITI RADIX. (Napellus.)****1. TINCTURA ACONITI.**

*Comp.* Aconite 15 oz., rect. spir. 2 pints.

*Dose and Form.* a. 10—20 drops; c. 1—2 drops,  
(in diluted spirit.)

**ALCOHOL. (See Stimulants.)****BELLADONNA. (Atropa B. Deadly nightshade. The leaves.)**

*Dose.* a. 2 oz.; c. 2—5 gr.

**1. EXTRACTUM BELLADONNÆ. (The inspissated juice.)**

*Dose.* a. 2—4 dr.; b.  $\frac{1}{2}$ —1 dr.; c. 5—20 gr.

**2. EMPLASTRUM BELLADONNÆ. (See Part II.)****3. TINCTURA BELLADONNÆ.**

*Comp.* Dried bell. 2 oz.; rect. sp. 20 oz.

*Dose.* a.  $\frac{1}{2}$ —2 oz.

**ATROPIA. (Crystallized alkaline salt, from the roots of Atropa Belladonnæ.)**

*Dose.* a. 1—2 gr.; c.  $\frac{1}{10}$  gr.—in solution.

**CANNABIS INDICA. (Indian Hemp.)**

*Dose.* a.  $\frac{1}{2}$ —2 dr.

**1. EXTRACTUM CANNABIS INDICÆ.****2. TINCTURA CANNABIS INDICÆ.**

**CHLOROFORMYL.** (Chloroform.)

*Form Inhaled.* Externally applied pure, or mixed with olive oil.

**COLCHICUM.** (Diuretics.)**CONIUM.** (*C. Maculatum.* The leaves and fruit.)

*Dose.* a. 1—2 oz.

1. **TINCTURA CONII.**

*Comp.* Hemlock  $2\frac{1}{2}$  oz., proof spir. 20 oz.

*Dose.* a. 1—4 oz.

2. **EXTRACTUM CONII.** (The inspissated juice.) (Often inert.)

*Dose.* c. 2—5 gr.

**DIGITALIS.** (Diuretics.)**HELLEBORUS.** (Cathartics, Emetics, *q.v.*)**HYOSCYAMUS.** (*H. niger.* Henbane.)1. **EXTRACTUM HYOSCYAMI.** (Inspiss. juice.)

*Dose.* a. 2—4 dr.; b.  $\frac{1}{2}$ —1 dr.; c. 5—20 gr.

2. **TINCTURA HYOSCYAMI.**

*Comp.* Henbane  $2\frac{1}{2}$  oz., proof spirit 20 oz.

*Dose.* c. 40—50 drops.

**NUX VOMICA.** (*Strychnos Nux Vomica.* Ratsbane. The seeds.)

*Dose.* a. 1 dr.; b. 5—15 gr.; c. 2 gr.

1. **EXTRACTUM NUCIS VOMICÆ.**

*Comp.* Nucis Vomicæ 8 oz., proof spirit 3 pints.

*Dose.* a. 10—20 gr.; b. 1—2 gr.; c.  $\frac{1}{4}$ — $\frac{1}{2}$  gr.

**STRYCHNIA.** (Crystalline Alkaloid of *Nux Vomica.*)

*Form and Dose.* a. 1—3 gr.; c.  $\frac{1}{32}$ — $\frac{1}{12}$  gr.

**OPIUM.** (*Papaver Somniferum.* The concrete juice of the unripe capsules.)

*Dose.* a. Horse, 1—2 dr.; ox, 2—4 dr.; b. 10—40 gr.; c.  $\frac{1}{2}$ —5 gr.

1. **EXTRACTUM OPII.** (Watery Extract,  $\frac{1}{3}$ d or  $\frac{1}{4}$ th more active than opium.)

*Dose.* a. 1 scr.—2 dr.; b. 5—30 gr.; c.  $\frac{1}{3}$ —3 gr.

2. **TINCTURA OPII.** (Laudanum.)

*Comp.* Opium  $1\frac{1}{2}$  oz., proof spir. 20 oz. (19 m.=1 gr.)

*Dose.* a. 1—3 oz.; b. 1—4 dr.; c. 15—30 drops.

3. **LINIMENTUM OPII.** (See Part II.)

**MORPHIÆ ACETAS.** (A crystallized salt from opium.)

*Dose.* a. 3—10 gr.; dog,  $\frac{1}{4}$ —1 gr.

*Incomp.* Mineral acids, alkalies.

1. **LIQUOR MORPHIÆ ACETATIS.**

*Comp.* Morph. acet. 4 dr., acetic acid 15 m., water 20 oz., proof spir. 10 oz. (1 gr. of acet. morph. in 1 dr.)

*Dose.* a.  $\frac{1}{2}$ —1 oz.; c.  $\frac{1}{2}$ —1 dr.

**MORPHIÆ HYDROCHLORAS.** (Idem. Less liable to decomposition than the acetate.)

*Dose.* a. 3—10 gr.; dog,  $\frac{1}{4}$ —1 gr.

**PAPAYER.** (*P. Somniferum.* The ripe capsules.)

1. **EXTRACTUM PAPAVERIS.**

*Dose.* 2 dr.— $1\frac{1}{2}$  oz.; b.  $\frac{1}{2}$ —4 dr.; c. 4—20 gr.

2. **SYRUPUS PAPAVERIS.**

*Dose.* Dog, 2—4 dr.

**TABACUM.**

*Dose.* a. 4—5 dr.; dogs, 5—6 gr.



VERATRIA. (Alkaloid from the seed of *Asagraea officinalis*.)

*Dose.* a. 1—3 gr.; c.  $\frac{1}{18}$ — $\frac{1}{12}$ .

VERATRUM. (V. Album. White Hellebore. The root.)

*Dose.* a. 1—2 scr.; dogs, 2 grs. of the powder.

*Purgatives.*

(Cathartics, Laxatives, Aperients, Drastics.)

ALOE. (Ext. Al. purif. Purified extract of Aloes.)

ALOE BARBADENSIS. (A. Vulgaris. Common Aloe. Inspissated juice.)

ALOE HEPATICA. (Uncertain Species.)

ALOE SPICATA. (Spiked Aloe.)

*Note.*—The extract sold as Cape Aloes is procured from the Aloe Spicata.

ALOE SOCOTRINA. (Uncertain Species.)

*Note.*—East Indian Aloes is procured from the *Aloe Perfoliata* of Linnæus, which is identical with the Aloe Socotrina. Many kinds of aloes from the interior of India find their way into the market under the name of East India or Bombay Aloes.

1. EXTRACTUM ALOES BARBADENSIS.

*Dose.* a. 2—6 dr.; b. 1—3 dr.; c. 10 gr.—2 dr.

2. EXTRACTUM ALOES SPICATA. (Cape Aloes.)

*Dose.* a. 3—8 dr.

3. EXTRACTUM ALOES SOCOTRINA.

*Dose.* a. 3—8 dr.

*Note.*—The Aloetic Extract is by far the best purgative for the horse; but one extract, the Barbadoes, is nominally in use amongst British Veterinarians. It is often, not honestly, but without perhaps deteriorating it in a medical point of view, mixed with the Cape Extract, which has unjustly fallen into disrepute. The so-called Socotrine Aloes is much in use on the Continent; but various kinds, often impure and possessing but slight purgative properties, are found in the druggists' shops and pharmacies of Veterinarians; hence Aloes is considered an unsafe and uncertain purgative by even eminent practitioners. With reference to the value of different extracts, Mr Percivall has proved, by carefully conducted inquiry, that the Barbadoes is, about in the proportion of a drachm to the ounce, stronger than the Cape. Attention must, therefore, be paid to the quality of the drug, the form in which it is given, and the circumstances under which it is exhibited. My father, Mr Joseph Gamgee,\* says :—"The practical deduction I have arrived at, however, is, that adhering to the one or to the other of the aloetic extracts is, perhaps, not so wise as using the kind most applicable in a particular case. We cannot, I believe, so regulate as to ensure the same result from a modified dose of the one, as by extending our range of choice. Is the fine and more gummy socotrine, possessed as it is of milder properties than the rest, to be recommended in the case of a young, ill-conditioned, and weak horse, in which an active or drastic drug would prove injurious, whereas a more bland one would prove highly beneficial? Trainers in Italy have had recourse to the purgative mass I had in my Pharmacy (containing socotrine aloes as used on the Continent), and extolled its use above all others, after long experience in the use of the Barbadoes, which proved less manageable, and not more certain. The Cape Extract produces copious purging, but less watery evacuations than the Barbadoes, and the action of the bowels is not so long kept up. These are decided advantages; for I know of no case where a protracted purging is desirable in the horse, whereas there are many causes for objection and fear."

\* Aloes and Enemata in the Horse, etc. Veterinarian, 1856.

## 4. PILULA ALOES. (Aloetic Mass).

*Comp.* Aloes 8 parts, rectified spirit 1 part, treacle 3 parts.

*Dose.* According to the variety of aloes, calculating one drachm and a half of the mass for every drachm of the drug which it is thought desirable to administer.

## 5. PILULA ALOES COMPOSITA.

*Comp.* Barbadoes aloes and treacle equal parts, ginger 2 oz. to every pound of aloes.

*Dose.* a.  $\frac{1}{2}$ —1 $\frac{1}{2}$  oz.

## 6. PILULA ALOES CUM GENTIANA.

*Comp.* Equal parts of aloes, gentian, and treacle.

*Dose.* a. 6—10 dr.

*Nota.*—The Gentian may be conveniently added to the formula No. 1, so that every two and a half drachms of mass will contain a drachm of aloes. Mr Hurford, veterinary surgeon to the 15th King's Hussars, says, that "his ordinary purging ball" is composed of aloes and gentian, of each 5ijss.; and that this comparatively small dose of the cathartic ingredient generally produces a commencement of purgation in ten hours from its administration."\*

## 7. PILULA ALOES ET FERRI.

*Comp.* 4 aloes, 3 ferri sulph., 1 pulv. zingib., 2 treacle.

*Dose.* a. 4—10 dr.

## 8. SOLUTIO ALOES.

*Comp.* 1 aloes, 7 distilled water, 1 proof spirit.

(Dissolve the aloes in the water by means of the water-bath, and when removed, add the spirit.)

*Dose.* a. 4 to 8 oz.

CAMBOGIA. (Gum resin of *Garcinia Cambogia*.)

*Dose.* a. Horse,  $\frac{1}{2}$ —1 oz.; ox, 2—4 oz.; b.  $\frac{1}{2}$ —1 dr.; c. 5 gr. to 1 scr.

\* Veterinarian, 1851.

*Note.*—Hertwig has experimented largely on the action of camboge. He says that it purges the horse more rapidly than aloes; that dogs are susceptible to doses from six grains to a scruple; and, according to Viborg, a drachm of camboge, given in twice to prevent vomiting, will purge the pig.

**COLCHICI CORMUS.** (C. Autumnale, recent and dry.)

*Dose and Form.* Powder: *a.*  $\frac{1}{2}$ —2 dr.; *c.* 2—8 gr.

1. **ACETUM COLCHICI.**

*Comp.* Dried colchicum cormus  $\text{℥iiss.}$ , dilute acetic acid  $\text{℥xxx.}$ , proof spirit  $\text{℥jss.}$

*Dose.* *a.* 2—6 oz.

*Incompat.* Alkalies.

**HYDRARGYRUM.** (Alteratives.)

1. **Hydrargyrum cum Creta.**

*Comp.* 8 mercury, 5 chalk.

*Dose.* *c.* 5—10 grains (alterative), 10—20 grains (laxative.)

*Form.* Powder, pill.

*Incomp.* Acids and acidulous salts.

2. **HYDRARGYRI CHLORIDUM.** Calomel.

*Dose.* *a.*  $\frac{1}{2}$  to 2 dr.; *b.* 10—20 gr.; *c.* 1—4 gr.

*Form.* Pill, powder. Generally combined with aloes for the horse.

*Incompat.* Most salts, acids, and alkalies.

3. **PILULÆ HYDRARGYRI CUM FERRI.** (Ferruginated Blue Pill.)

*Comp.* 2 mercury, 1 sesquioxide of iron, 3 confection of roses.

*Dose.* *a.*  $\frac{1}{4}$ —4 dr.

**JALAPA.** (Exogonium Purgo. The tuber.)

*Dose.* Dog, 1—2 dr.

*Form.* Powder, pill, bolus, single or (more generally) combined.

**MAGNESIA.****1. MAGNESIA.** (Calcined Magnesia.)

*Dose.* 2—8 drachms for foals and calves.

**2. MAGNESIA CARBONAS.**

*Dose.*  $\frac{1}{2}$ —2 oz. for foals and calves.

*Incompat.* Acids, alkalies, most salts, etc.

**3. MAGNESIA SULPHAS.** (Epsom Salts.)

*Dose.* *a.*  $\frac{1}{2}$ —2 lb.; *b.* 4—6 oz.

*Form.* In solution. Twenty drops of sulphuric acid to every ounce of the salt lessen its nauseously bitter taste. For the same purpose, epsom salts may be given with treacle.

*Incompat.* Murates, nitrates, acetates, carbonates, etc.

**MANNA.** (*Fraxinus rotundifolia*. The concrete juice.)

*Form and Dose.* Dog, 1 to 2 oz. in solution, in milk, etc.

**POTASSÆ SULPHAS.**

*Dose.* *a.*  $\frac{1}{4}$ —1 lb.

*Form.* In solution.

*Incompat.* Nitric and hydrocyanic acids, etc.

**POTASSÆ BITARTRAS** (Cream of Tartar.)

*Dose.* *b.*  $\frac{1}{2}$ —1 oz.; *c.* 2—4 dr.

*Incompat.* Alkalies and alkaline earths, mineral acids, etc.

**RHAMNI SUCCUS.** (*Rhamnus Catharticus*. Buckthorn. Juice of the berries.)**1. SYRUPUS RHAMNI.**

*Comp.* Buckthorn juice, ginger, pimenta, and sugar.

*Dose.* Dog,  $\frac{1}{2}$ —2 oz.; forms a third part of the castor oil mixture, which is so justly recommended as a purgative for the dog.

**RHEUM.** (*Rheum Sinense*. Rhubarb. Root of an uncertain species of *Rheum*.)

*Dose.* For the pig, 1—3 oz; dog, 1—4 dr.

*Form.* Powder, electuary.

**RICINI OLEUM.** (*Ricinus communis*. Oil of the seeds. Castor Oil.)

*Dose.* *a.* 1 pint; *b.* 2—4 oz.; *c.*  $\frac{1}{2}$ —2 oz.

*Form.* Emulsion with aqua potassæ, or with gruel and aromatics, etc.

*Note.*—Six to eight of the castor oil seeds may be given to dog or pig.

**SAPO.** (See Antacids.)

**SENNA.** (*Alexandrina et Indica*.) (*Cassia officinalis*, and *C. obovata*. The leaves.)

*Dose and Form.* Dog, 1—4 dr.

1. **INFUSUM SENNÆ COMPOSITUM.**

*Comp.* Senna 5 oz., ginger 4 oz., water 20 oz.

*Dose.* Dog, 1—4 oz.

*Incomp.* Strong acids, metallic salts, lime water.

2. **CONFECTIO SENNÆ.** (Lenitive Electuary.)

*Comp.* 4 senna, 6 figs, 3 tamarinds, 3 cassia pulp, 8 prunes, 2 coriander,  $1\frac{1}{2}$  liquorice, syrup q.s.

*Dose.* Dog, 1—4 dr.

This is a very useful preparation in the treatment of diseases of the dog.

**SODÆ SULPHAS.** (Glauber's Salt.)

*Dose.* *a.* Horse, 1—2 lb.; ox,  $\frac{1}{2}$ —1 lb.; *b.* 4—6 oz.;

*c.*  $\frac{1}{2}$ —2 oz.

*Form.* Solution.

*Incomp.* Fixed alkalis and their carbonates.

*Note.*—Tabourin says—"As a purgative for the horse, sulphate of soda is, from its efficacy and cheapness, one of the most valuable agents of the materia medica. . . . English, and a good number of French veterinarians, have little confidence in the purgative properties of sulphate of soda; but M. Rey \* has distinctly proved that this depends on the insufficient doses usually administered." Aloes is certainly not superseded by sulphate of soda, the effects of which are not so constant and satisfactory as those of our purging masses.

### SODÆ ACETAS.

*Dose.* Ox, 3—6 oz.; b. 1—2½ dr.; c. 10—40 gr.

*Incomp.* The mineral acids.

### SULPHUR. (S. Sublimatum et Præcipitatum. Flowers of Sulphur.)

*Dose.* a. 1—2 oz.; b. 2 dr.—1 oz.; c. ½—2 dr.

*Form.* Powder, electuary, suspended in milk, etc.

### TAMARINDUS. (Tamarindus Indica. The pulp of the legume.)

*Dose.* For dog or cat, from ½—4 dr. It is a useful laxative, which a dog or cat will take without difficulty.

*Incomp.* Salts of soda and potass.

### TEREBINTHINÆ OLEUM. (Distilled oil from the resin of Pinus Silvestris.)

*Dose.* a. ½ to 1 pint (a somewhat dangerous cathartic.)

*Form.* In gruel, or floating on any fluid. Emulsion.

### ENEMA TEREINTHINÆ.

*Comp.* Ol. terebint. 6 oz., linseed oil, and gruel or barley water, of each 1 pint.

\* Journ. de Médec. Véter. de Lyon, 1849, p. 432, etc.

**TIGLII OLEUM.** (Croton Tiglium. Croton Oil. Expressed from the seeds.)

*Dose.* a. 15—30 drops; b. 3—6 drops; c. 2—4 drops.

*Form.* In oil or emulsion. Pill, with bread or any extract.

**TIGLII CROTONIS SEMINA.** The seeds of the Croton.

*Dose.* a. 10—20; b. 2—6; c. 1—2.

Two croton beans, or six grains of ground croton, are equivalent to one drachm of Barbadoes aloes.

**VERATRUM.** (White Hellebore.) (See Emetics.)

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*Refrigerants.*

(Antiphlogistics, Temperants, Febrifuges, Salines.)

**ACETUM.** (A. Britannicum. Common Vinegar.)

1. Acetum Distillatum. (Distilled Vinegar.)

*Dose.* a. 1—4 oz.; b. 2 dr.—1 oz.; c. 1—2 dr.

**ACIDUM ACETICUM.** (From Wood. Seven times stronger than distilled vinegar.)

*Dose.* a. 2—4 dr.; b.  $\frac{1}{2}$ —1 $\frac{1}{2}$  dr.; c. 3—6 drops.

**ACIDUM CITRICUM.** (Solid Salt of Lemons.)

*Dose and Form.* Dog, 5—15 grains diluted in water with sugar.

*Incomp.* Acids and Alkalies.



*Nota.*—The following quantities of alkaline carbonates are required to saturate a scruple of Acid :—Cit. Pot. Bicarb. gr. xxix., pot. carb. gr. xxiv., ammon. sesquic. gr. xvii., carb. sodæ gr. xli, sod. sesquic. gr. xxiv.—PERRIRA.

### ACIDUM HYDROCHLORICUM DILUTUM.

*Comp.* Acid. hydrochlor. ℥j., water ℥ij.

*Dose.* a. 2—4 dr. ; b. 15—30 drops ; c. 5—15 drops, largely diluted.

### ACIDUM NITRICUM DILUTUM.

*Comp.* Acid. nitric. ℥ij., water ℥xvij.

*Dose.* a. 2—4 dr. ; b. 15—30 drops ; c. 5—15 drops, largely diluted.

#### 1. SPIRITUS ÆTHERIS NITRICI.

*Comp.* Spir. rect. ℥xl., acid nitrici ℥ijss., distil to ℥xxviii.

*Dose.* a. 2—4 oz. ; b. 2—4 dr. ; c. 1—2 dr.

### ACIDUM SULPHURICUM DILUTUM.

*Comp.* Acid. sulph. ℥xv., water ℥xx.

*Dose.* a. 2—4 dr. ; b. 15—30 drops ; c. 5—15 drops, largely diluted.

*Incomp.* Alkaline carbonates, metallic oxides.

### AMMONIA.

#### 1. LIQUOR AMMONIÆ ACETATIS.

*Comp.* Am. sesquic. ℥ix. (vel q. s.), acid acet. dilut. ℥xx. (A saturated solution.)

*Dose.* a. 2—6 oz. ; b.  $\frac{1}{2}$ —1 oz. ; c. 1—4 dr.

*Incomp.* Acids and alkalies.

### POTASSÆ BITARTRAS. (Cream of Tartar.)

*Dose.* a. 1—2 oz. ; b. 2—4 dr. ; c.  $\frac{1}{2}$ —2 dr.

In the water the animals drink.

**POTASSÆ NITRAS.** (Nitre.)

*Dose.* a. 1—4 dr.; b. 10—30 gr.; c. 2—8 gr.

*Incomp.* Sulph. acid, alkaline sulphates.

**POTASSÆ CARBONAS.**

1. LIQUOR POTASSÆ CARBONATIS.

**POTASSÆ BICARBONAS.****SODA.**

1. Sodæ Carbonas. (Antacids.)
2. Sodæ Bicarbonas. (Antacids.)

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*Stimulants.***ÆTHER.** (Æther Sulphuricus.)

*Dose.* a.  $\frac{1}{2}$ —2 oz.; b. 1—4 dr.; c. 20 drops—1 dr.

1. SPIRITUS ÆTHERIS COMPOSITUS.

*Comp.* Æth. 8 oz., spir. rect. 16 oz., ætherial oil 3 dr.

*Dose.* a. 1—4 oz.; b. 2—6 dr.; c.  $\frac{1}{2}$ —1 dr.

**ALCOHOL.** Sp. grav. 815.

*Dose.* a. 1—2 oz.; b. 1—2 dr.; c.  $\frac{1}{2}$ —1 dr.

1. SPIRITUS RECTIFICATUS. (Rectified spirit. Diluted alcohol.) Sp. grav. 838.

*Comp.* 8 alcohol, 1 water.

*Dose.* a. 2—4 oz.; b. 2—4 dr.; c. 1—2 dr.

2. SPIRITUS TENUIOR. (Alcohol still more diluted. Proof spirit.) Sp. grav. 920.

*Comp.* 5 rectified spirit, 3 water.

*Dose.* a. 2—8 oz.; b. 4 dr.—1 oz.; c. 2—4 dr.

## AMMONIA.

1. AMMONIÆ LIQUOR. (1 Ammonia, 9 water.) Sp. grav. 960.  
*Dose.* a.  $\frac{1}{2}$ —2 oz.; b. 1—3 dr.; c. 10—30 drops.
2. AMMONIA LIQUOR FORTIOR. Sp. grav. 882. (1 Ammonia, 3 water—nearly.)  
*Dose.* a.  $\frac{1}{2}$ —1 oz.; b. 1—2 dr.; c. 5—15 drops.
3. AMMONIÆ SESQUICARBONAS. (Hartshorn salt, sal volatile.)  
*Dose and Form.* a. 2—4 dr.; b.  $\frac{1}{2}$ —1 dr.; c. 5—10 gr., in bolus or cold gruel.
4. LIQUOR AMMONIÆ SESQUICARBONATIS.  
*Comp.* Sesquic. of ammonia 1 oz., water 5 oz.  
*Dose.* a. 1—3 oz.; b.  $\frac{1}{2}$ —1 $\frac{1}{2}$  oz.; c.  $\frac{1}{2}$ —1 dr.
5. SPIRITUS AMMONIÆ AROMATICUS.  
*Comp.* A solution of the carbonate of ammonia, with cinnamon, cloves, and lemon-peel.  
*Dose.* a.  $\frac{1}{2}$ —2 oz.; b.  $\frac{1}{2}$ —1 oz.; c.  $\frac{1}{2}$ —1 dr.
6. SPIRITUS AMMONIÆ FÆTIDUS.  
*Comp.* The same, with assafœtida in place of cinnamon, etc.  
*Dose.* a.  $\frac{1}{2}$ —2 oz.; b.  $\frac{1}{2}$ —1 oz.; c.  $\frac{1}{2}$ —1 dr.
7. LINIMENTUM AMMONIÆ. (See Part II.)
8. LINIMENTUM AMMONIÆ SESQUICARBONATIS. (See Part II.)

## ARNICA. (Arnica Montana—Flowers in powder.)

- Dose.* a. 1—2 oz.; b. 2—4 dr.; c. 5—30 gr.  
*Form.* In bolus, electuary, or in gruel.
1. ARNICÆ INFUSUM.  
*Comp.* Arnica 2 oz., boiling water a pint.  
*Dose.* a.  $\frac{1}{2}$ —1 $\frac{1}{2}$  pints.

**CREOSOTUM.** (Oxyhydrocarburet from pyroxylic oil.)

*Dose.* a.  $\frac{1}{2}$ —2 dr.; b. 10—30 drops; c. 2—8 drops.

*Form.* In a mass with syrup, or in a solution made with acetic acid, oils, or alcohol.

*Incomp.* Mineral acids.

**VINUM XERICUM.** (Sherry Wine.)

*Dose.* a.  $\frac{1}{2}$ —1 pint.

Various wines are useful stimulants. Their place is well supplied with brandy, etc.

From the class of Aromatic Bitters.

*Absinthium.**Anthemis.*

1. Infusum Anthemidis.

2. Oleum Anthemidis.

*Aurantii Cortex.**Limonum Cortex.**Capsicum.*

1. Tinctura Capsici.

*Cardamomum.*

1. Tinctura Cardamomi.

2. Tinctura Cardamomi Composita.

*Cinnamomum.**Cubeba.**Pimenta.**Piper Longum.**Piper Nigrum.**Sinapis.**Zingiber.*

1. Tinctura Zingiberis.

2. Syrupus Zingiberis.

## From Narcotics.

*Camphora.**Nux Vomica. Strychnine.*

## From Antispasmodics.

*Valeriana.*1. *Tinctura Valerianæ.*2. *Tinctura Valerianæ Ammoniata.**Petroleum.*

## From Carminatives.

*Anethum.**Anisum.**Carui.**Coriandrum.**Cuminum.**Lavandula.**Mentha Piperita.*

## From Expectorants.

*Myrrha.*

## From Emmenagogues.

*Ergota.**Ruta.**Sabina.*

## From Diuretics.

*Cantharis.**Terebinthina.**Spiritus Ætheris Nitrici.*

*Tonics.*

## MINERAL TONICS.

(Acids, Earths, Metals.)

## ACIDUM ARSENIOSUM. (White Arsenic.)

*Dose.* a. 5—15 gr.; b. 2—6 gr.; c.  $\frac{1}{16}$ — $\frac{1}{8}$  gr.*Incomp.* Acids, earths, bitter infusions.

## 1. LIQUOR ARSENICI CHLORIDI.

*Comp.* Arsenious acid  $\frac{1}{2}$  dr., hydrochloric acid  $1\frac{1}{2}$  dr., water 20 oz. (An ounce contains  $1\frac{1}{2}$  grains of arsenious acid.)*Dose.* a. 2—4 oz.; b. 1—4 dr.; c. 5—15 drops.

## 2. LIQUOR POTASSÆ ARSENITIS. (Liquor Arsenicalis. Fowler's solution.)

*Comp.* Arsenious acid, carb. of pot.  $\bar{a} \bar{a}$  4 scruples, compound tinct. lavender 5 drachms, water 20 oz.*Dose.* a. 1—3 oz.; b.  $\frac{1}{2}$ —3 dr.; c. 3—10 drops. (An ounce contains four grains of arsenic.)

*Note.*—As a medicine for dogs, Mr Mayhew recommends the Liquor Arsenicalis to be prepared as follows:—‘Take any quantity of arsenious acid, and adding to it so much distilled water as will constitute one ounce of the fluid to every four grains of the substance, put the two into a glass vessel. To these put a quantity of carbonate of potash, equal to that of the acid, and let the whole boil until the liquid is perfectly clear. The strength is the same as the preparation used in human practice; the only difference is, the colouring and flavouring ingredients are omitted, because they render the medicine distasteful to the dog. The dose for the dog is from one drop to three drops; it may be carried higher.

**ACIDUM HYDROCHLORICUM DILUTUM.** (Dilute Muriatic Acid.)

*Comp.* Hydrochloric acid 1 part, water 3 parts.

*Dose.* a. 1 dr.— $\frac{1}{2}$  oz.; b. 20 drops—1 dr.; c. 5—15 drops. In aqueous fluids.

*Incomp.* Alkalies, earths, etc.

(See Refrigerants.)

**ACIDUM NITRICUM DILUTUM.**

*Comp.* Nitric acid 3 oz., water 17 oz.

*Dose.* a. 1 dr.— $\frac{1}{2}$  oz.; b. 20 drops—1 dr.; c. 5—15 drops.

*Incomp.* Acids, earths, sulph. of iron, etc.

**ACIDUM SULPHURICUM DILUTUM.**

*Comp.* Sulphuric acid 15 dr., water 20 ounces.

*Dose.* a. 1 dr.— $\frac{1}{2}$  oz.; b. 20 drops—1 dr.; c. 5—15 drops.

*Incomp.* Earthy oxides, alkaline carbonates.

**ARGENTI NITRAS.** (Lunar Caustic. Lapis Infernalis.)

*Dose.* a. 6—12 gr.; b. 2—4 gr.; c.  $\frac{1}{4}$ — $\frac{1}{2}$  gr. in bolus or solution.

**CUPRI SULPHAS.** (Blue vitriol.)

*Dose.* a. 1—2 dr.; b. 6—30 gr.; c. 1—3 gr.

1. **CUPRI AMMONIO-SULPHAS.** (C. Ammoniatum. Ammonio-Sulphate of Copper.)

*Dose.* a. 1—2 dr.; b. 6—30 gr.; c. 1—3 gr.

## FERRUM.

1. FERRI SESQUIOXYDUM. (Ferri Oxydum, F. Carbonas, F. Subcarbonas, F. Rubigo.)  
*Dose and Form.* a.  $\frac{1}{2}$ —2 oz.; b. 2—4 dr.; c. 10—40 gr., in bolus, or with honey as an electuary, etc.
2. FERRI CARBONAS.  
*Dose.* a. 2—4 dr.; b. 1—2 dr.; c. 4—20 gr., in bolus or electuary.
3. FERRI SULPHAS.  
*Dose.* a. 1—4 dr.; b.  $\frac{1}{2}$ —1 $\frac{1}{2}$  dr.; c. 4—20 gr.
4. FERRI POTASSIO-TARTRAS. (F. Tartarisatum.)  
*Dose.* a. 2 dr.—1 oz.; b. 1—2 dr.; c. 15—30 gr.
5. VINUM FERRI.  
*Comp.* Iron  $\frac{1}{2}$  oz., sherry 20 oz.  
*Dose.* c. 1—2 dr.

## ZINCUM.

1. ZINCI OXYDUM. (Flores Zinci.)  
*Dose.* a. 2—4 dr.; dog, 10—15 gr.
2. ZINCI CHLORIDUM.  
*Dose.* a. 1—2 dr.
3. ZINCI SULPHAS.  
*Dose.* a. 2—3 dr.; b. 1—2 scr.; c. 2—3 gr.

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*Vegetable Tonics—Bitter Tonics.*

CINCHONA FLAVA. (C. Calisaga. C. Cordifolia.)

CINCHONA PALLIDA. (C. Condaminea. C. Lancifolia.)



**CINCHONA RUBRA.** (S. sp. incert. C. Oblongifolia.)

*Dose.* a.  $\frac{1}{2}$ —4 oz.; b. 2—4 dr.; c. 1 scr.—2 dr.

1. **INFUSUM CINCHONÆ.**

*Comp.* 1 cinchona, 20 water.

*Dose.* a.  $\frac{1}{2}$ —2 pints; b. 4—6 oz.; c. 1—2 oz.

*Incomp.* Lime water, tart. emet., sulphate of zinc and iron.

2. **INFUSUM CINCHONÆ SPISSATUM.**

*Comp.* An inspissated infusion of C. Flava: sp. gr. 1·200. (Liquor Cinchonæ.)

*Dose.* a. 2—6 oz.; b. 1—2 oz.; c. 1—4 dr.

**GENTIANA.** (G. Lutea. The root.)

*Dose.* Powder: a. Horse,  $\frac{1}{2}$ —1 oz.; ox, 1—2 oz.; b.  $\frac{1}{2}$ —2 dr.; c. 10—40 gr.

1. **INFUSUM GENTIANÆ COMPOSITUM.**

*Comp.* Gentian 2 dr., orange-peel 2 dr., fresh lemon-peel  $\frac{1}{2}$  oz., water 20 oz.

*Dose.* b. 2—4 oz.; c.  $\frac{1}{2}$ —2 oz.

2. **EXTRACTUM GENTIANÆ.** (Watery Extract.)

*Dose.* a.  $\frac{1}{2}$ —1 oz.; b.  $\frac{1}{2}$ —1 dr.; c. 10—30 gr.

**QUASSIA.** (Picræna. Q. excelsa. The wood.)

*Dose.* a.  $\frac{1}{2}$ —1 $\frac{1}{2}$  oz.; b.  $\frac{1}{2}$ —2 dr.; c. 10—30 gr.

**QUINÆ DISULPHAS.** (Sulphate of Quinine. Salt prepared from Cinchona Flava.)

*Dose.* a. 20 gr.—2 scr.; b. 10—15 gr.; c. 1—8 gr.

1. **TINCTURA QUINÆ COMPOSITA.**

*Comp.* Q. disulph. 2 dr. and 2 scr., tinct. aurant. 20 oz. (1 grain of Q. D. in 1 dr.)

*Dose.* a. 1—2 oz.; b. 1—6 dr.; c.  $\frac{1}{2}$ —4 dr.

## PART II.

## REMEDIES FOR EXTERNAL AND LOCAL USE.

*Cataplasmata. Poultices.—Emollient. Sedative.*

1. CATAPLASMA LINI. (Linseed-meal Poultice.)  
*Comp.* Boiling water  $\frac{1}{2}$ —2 pints, linseed-meal 5—20 oz., vel q.s.
2. CATAPLASMA BELLADONNÆ. (Belladonna Poultice.)  
*Comp.* Boiling water  $\frac{1}{2}$ —2 pints, ext. belladonnæ  $\frac{1}{2}$ —2 oz., linseed-meal or bran 5—20 oz., vel q.s.
3. CATAPLASMA CONII. (Hemlock Poultice.)  
*Comp.* Boiling water  $\frac{1}{2}$ —2 pints, ext. conii, 1—2 oz., linseed-meal 15—20 oz., vel q.s.

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*Stimulant. Antiseptic.*

1. CATAPLASMA SINAPIS. (Mustard Poultice.)  
*Comp.* Warm water  $\frac{1}{2}$ —2 pints, powdered mustard  $\frac{1}{2}$ —2 pounds. (Half linseed may, in some cases, be substituted for half the mustard.)  
*Incomp.* Too hot water, or alcohol, or vinegar, are apt to injure the production of the volatile oil.
2. CATAPLASMA FERMENTI. (Yeast Poultice.)  
*Comp.* Beer, yeast, and water, heated to 100° Fahr., each 5—10 f. oz., flour 1—2 pounds. (Mix the yeast with the water, add the flour, and stir until a cataplasm is made. Place it near the fire until it rises.)

## 3. CATAPLASMA CARBONIS. (Charcoal Poultice.)

*Comp.* Boiling water  $\frac{1}{2}$ —2 pints, linseed-meal 5—20 oz., charcoal  $\frac{1}{2}$ —2 oz.

## 4. CATAPLASMA SODÆ CHLORINATÆ.

*Comp.* Boiling water  $\frac{1}{2}$ —2 pints, linseed-meal 5—20 oz., sod. chlor. 2—6 oz.

*Caustica. Vesicantia. Irritantia. (Caustics. Blisters. Counter-irritants.)*

## 1. POTASSÆ HYDRAS. (Hydrate of Potash.)

## 2. POTASSA CUM CALCE. (Equal parts of potassa and lime.) Less deliquescent than the preceding.

## 3. ARGENTI NITRAS.

## 4. ACIDUM ACETICUM.

## 5. ACIDUM NITRICUM.

## 6. ACETUM CANTHARIDIS. (Vinegar of Cantharides.)

*Comp.* 1 cantharides, 8 dilute acetic acid.

## 7. OLEUM CANTHARIDIS. (Oil of Cantharides.)

*Comp.* 1 cantharides, 8 olive oil.

*Note.*—A more active preparation has been recommended by Mr Morton for medicating setons; it consists of 1 part of cantharides digested in 8 of oil of turpentine; it is filtered, and an equal quantity of Canada balsam mixed with it.

## 8. TINCTURA CANTHARIDIS PYROXYLIC. (Pyroxylic Tincture of Cantharides.)

*Comp.* 1 cantharides, 6 pyroxylic spirit.

## 9. UNGUENTUM CANTHARIDIS. (Ointment of Cantharides.)

*Comp.* 1 cantharides, 6 hog's lard.

10. UNGUENTUM CANTHARIDIS CUM EUPHORBIO.  
*Comp.* 2 canth., 2 oil of turp., 1 powdered euphorbium, 1 of oil of origanum, 16 hog's lard.
11. UNGUENTUM ANTIMONII POTASSIO-TARTRATIS. Tartar-emetic Ointment.  
*Comp.* 1 ant. pot. tart., 4 lard.
12. UNGUENTUM SABINÆ. Savine Ointment.  
*Comp.* 1 savine, 2 lard.
13. UNGUENTUM HYDRARGYRI BINIODIDI. Ointment of the Biniodide of Mercury.  
*Comp.* 1 Hydrargyri biniod : 8 adeps præp.
14. CAPSICUM. Added to Cataplasms.

(*MOXAS*.—Substances for producing counter-irritation by being burnt on the part. Rarely used by veterinarians, as the actual cautery is more convenient and more effectual. Moxas 'are composed of various materials, and may be composed of any that will burn down slowly, such as cotton, the pith of plants, agaric, German tinder, etc. Percy used an artillery match. Larrey's moxa was a truncated cone of cotton stitched in linen, about four lines wide, and six lines high. Dr Sadler's, of St Petersburg, are composed of the pith of the sunflower, cotton, and linen, steeped in a solution of nitre. Gräfe employed wafers, dipped in three parts of oil of turpentine and one part of æther.')  


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*Cerata et Unguenta. Ointments.—Emollient. Defensive.*

1. CERATUM.  
*Comp.* Wax and olive oil, equal parts.
2. CERATUM PLUMBI ACETATIS.  
*Comp.* Plumb. Acet. 5 dr., white wax 8 oz., ol. oliv. 20 oz.

3. UNGUENTUM SAMBUCL. (Elder Ointment.)  
*Comp.* Elder flowers and lard, equal parts; boil and strain.
4. UNGUENTUM ZINCI.  
*Comp.* 1 oxide of zinc, 6 lard.

## STIMULANT. DIGESTIVE.

1. UNGUENTUM CREOSOTI.  
*Comp.* 3 resin, 3 wax, 4 olive oil.
2. UNGUENTUM CUPRI DIACETATIS.  
*Comp.* 1 diacet. of copper, 1 common turpentine or resin, 12 hog's lard.
3. UNGUENTUM GALLÆ COMPOSITUM.  
*Comp.* Powdered galls 2 dr., lard 2 oz., opium  $\frac{1}{2}$  dr.
4. UNGUENTUM HELLEBORI NIGRI. (Ointment of Black Hellebore.)  
*Comp.* Black hellebore and lard, of each equal parts.
5. UNGUENTUM HYDRARGYRI AMMONIO-CHLORIDI. (White Precipitate Ointment.)  
*Comp.* Hydr. am. chlor. (white precipitate) 1 dr., lard  $1\frac{1}{2}$  oz.
6. UNGUENTUM HYDRARGYRI NITRATIS. (Citrine Ointment.)  
*Comp.* Nitrate of mercury 2 oz., lard 6 oz., olive oil 4 oz.
7. UNGUENTUM HYDRARGYRI NITRICO-OXIDI. (Red Precipitate Ointment.)  
*Comp.* 1 hyd. nit. ox., 2 wax, 6 lard.
8. UNGUENTUM PICIS LIQUIDI. (Tar Ointment.)  
*Comp.* Suet and tar, equal parts.
9. UNGUENTUM PICISBURGUNDICÆ CUM PETROLEO. (Tar and Burgundy Pitch Ointment.)  
*Comp.* Barbadoes tar, Burgundy pitch, mutton suet—of each equal parts.

## 10. UNGUENTUM TEREBINTHINÆ. (Ointment of Turpentine.)

*Comp.* 1 common turpentine, 3 hog's lard.

## 11. UNGUENTUM ZINCI CARBONATIS. (Ointment of Carbonate of Zinc.)

*Comp.* 1 carbonate of zinc, 6 hog's lard.

## ALTERATIVE. DISCUTIENT.

## 1. UNGUENTUM HYDRARGYRI. (Mercurial Ointment.)

*Comp.* 24 mercury, 23 lard, 1 suet.

## 2. UNGUENTUM HYDRARGYRI IODIDI.

*Comp.* 1 iod. of merc., 2 wax, 6 lard.

## 3. UNGUENTUM IODINI.

*Comp.* 1 iodine, alcohol a few drops, 8 lard.

## 4. UNGUENTUM POTASSII IODIDI.

*Comp.* Iod. potassii 2 dr., water 2 dr., lard 2 oz.

## 5. UNGUENTUM IODINII COMPOSITUM.

*Comp.* Iodine  $\frac{1}{2}$  dr., iodide of potassium 1 dr., alcohol 1 dr., lard 2 oz.

## 6. UNGUENTUM PLUMBI IODIDI.

*Comp.* 1 iodide of lead, 8 lard.

## SPECIFIC.

## 1. UNGUENTUM SULPHURIS.

*Comp.* Sulphur 3 oz., lard 6 oz.

## 2. UNGUENTUM SULPHURI COMPOSITUM.

*Comp.* Sulphur 4 oz., white hellebore 10 dr., nitrate of potass 2 scr., soft soap 4 oz., lard 12 oz.

## 3. UNGUENTUM SULPHURIS CUM PICE.

*Comp.* Sulphur  $\frac{1}{2}$  oz., tar 1 oz., lard  $1\frac{1}{2}$  oz.

## 4. UNGUENTUM SULPHURIS IODIDI.

*Comp.* 1 iodide of sulphur, 6 lard.

## SEDATIVE. ANTISPASMODIC.

1. UNGUENTUM BELLADONNÆ.  
*Comp.* Ext. bell. 1 dr., lard 1 oz.
  2. UNGUENTUM CONII.  
*Comp.* A decoction of fresh conium in lard.
  3. UNGUENTUM OPII.  
*Comp.* Opium 1 scr., lard 1 oz.
  4. UNGUENTUM VERATRIA.  
*Comp.* Veratria 1 scr., olive oil 1 dr., lard 7 dr.
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*Emplastra. Plasters. Charges.*

## STIMULANT. DISCUTIENT.

1. EMPLASTRUM HYDRARGYRI COMPOSITUM.  
*Comp.* Burg. pitch  $1\frac{1}{2}$  lb., yellow wax  $1\frac{1}{2}$  lb., strong mercurial ointment 6 oz., iodine 6 dr.
2. EMPLASTRUM PICIS.  
*Comp.* 24 Burgundy pitch, 12 Venice turpentine, 4 wax, 4 resin, 2 olive oil.

## ANODYNE. EMOLLIENT.

1. EMPLASTRUM BELLADONNÆ.  
*Comp.* Equal parts of ext. bell. and soap plaster.
2. EMPLASTRUM OPII.  
*Comp.* 1 opium, 2 common turpentine, 8 lead plaster.

## ADHESIVE. DEFENSIVE.

1. EMPLASTRUM PLUMBI.  
*Comp.* Oxide of lead, olive oil, water.
2. EMPLASTRUM SAPONIS.  
*Comp.* 1 resin, 6 soap, 36 lead plaster.

## 3. EMPLASTRUM GELATINÆ.

*Comp.* Melted glue on stout cloth.

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*The Endermic Method.*

It is sometimes very advantageous to cause the introduction of therapeutic agents into the blood by absorption through the skin, especially after the removal of the cuticle, over a limited surface, by a blister. Aconite, belladonna, morphia, strychnia, and quinine may be thus used.

*Linimenta. Embrocationes. Fomentationes. Lotiones.*

## STIMULANT.

## 1. LINIMENTUM AMMONIÆ. (Stronger Liniment.)

*Comp.* 1 liquor ammoniæ, 2 olive oil.

## 2. LINIMENTUM AMMONIÆ SESQUICARBONATIS. (Weaker Liniment.)

*Comp.* 1 liq. amm. sesquicarb., 3 olive oil.

## 3. LINIMENTUM ÆRUGINIS.

*Comp.* 1 verdigris, 7 vinegar, 14 honey.

## 4. LINIMENTUM CAMPHORÆ.

*Comp.* Camphor 1 oz., olive oil 2 oz.

## 5. LINIMENTUM CALCIS. (Carron Oil.)

*Comp.* Lime water and linseed oil, equal parts.

## 6. LINIMENTUM HYDRARGYRI NITRATIS.

*Comp.* Solution of the nitrate of mercury and poppy oil.

## 7. LINIMENTUM PICIS LIQUIDÆ COMPOSITUM.

*Comp.* Pyroligneous oil of tar, oil of turpentine, rape oil, of each equal parts.



## 8. LINIMENTUM SAPONIS.

*Comp.* Soft soap 4 oz., camphor 1 oz., proof spirit 2 pints, solution of ammonia  $\frac{1}{2}$  pint.

## 9. LINIMENTUM TEREBINTHINÆ.

*Comp.* Soap 2 oz., camphor 1 oz., oil of turpentine 16 oz.

## 10. (LINIMENTUM CROTONIS.

*Comp.* 1 croton oil, 5 olive oil.)

## REFRIGERANT.

## 1. LIQUOR PLUMBI DIACETATIS. (Goulard.)

*Comp.* A watery solution of oxide and acetate of lead.

## 2. LIQUOR PLUMBI DIACETATIS DILUTUS.

*Comp.* Liq. pl. diacet.  $1\frac{1}{2}$  dr., spir. rect. 2 dr., water 20 oz.

## 3. (LOTIO AMMONIÆ HYDROCHLORATIS. Muriate of Ammonia Wash.

*Comp.* Ammon. hydrochlor. 1—2 oz., aquæ vel aceti 12 oz., spir. rect. 4 oz.)

## SEDATIVE. EMOLLIENT.

## 1. DECOCTUM PAPAVERIS.

## 2. LINIMENTUM OPII.

*Comp.* 1 tinct. opii, 3 liniment. saponis.

## 3. TINCTURA ACONITÆ.

## ASTRINGENT.

## 1. LIQUOR ALUMINIS COMPOSITUS.

*Comp.* Alum 2 dr., sulphate of zinc 2 dr., water 15 oz.

## 2. LIQUOR CALCIS.

*Comp.* Lime 1 oz., water 40 oz.

## 3. DECOCTUM QUERCUS.

*Comp.* Oak bark 10 dr., water 40 oz.—boil to 20 oz.

FOR WOUNDS AND SKIN DISEASES.

1. LINIMENTUM ÆRUGINIS.

*Comp.* 1 verdigris, 7 vinegar, 14 honey.

2. LIQUOR CUPRI AMMONIO-SULPHATIS.

*Comp.* Cupri am. sulph.  $\frac{1}{2}$  dr., water 10 oz.

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*Pulveres. Powders.*

DESSICCANT. ASTRINGENT. STIMULANT.

1. ALOES PULVIS.

2. CRETA PRÆPARATA.

3. ALUMEN ESSICCATUM.

4. RHEI PULVIS.

5. HYDRARGYRI NITRICO OXIDUM.

6. HYDRARGYRI CHLORIDUM.

7. ZINCI OXIDUM.

## II. FORMULARIUM VETERINARIUM.

## BALLS.

## 1.

R

Pil Hydrargyri,	3i.	Mercurial Pill,	1 dr.
Aloes Barb.,	3j.	Barbadoes Aloes,	1 dr.
Massæ Comm.,*	3vi.	Common Mass,	6 dr.

*M. Fiat Bolus.* To be administered daily. An alterative for horse.

## 2.

R

Hydrargyri,	partes ij.	Mercury,	2 parts.
Ferri Sesquioxidi,	pars i.	Sesquioxide of iron,	1 part.
Conf. Rosæ,	partes iii.	Confect. of Roses,	3 parts.

*Misce secundum artem.* Dose for horse,  $\frac{1}{2}$  to 2 drachms, with common or other mass. Dr Collier's Blue Pill.

## 3.

R

Hydrargyri Chlor.,	℥j.	Calomel,	1 scr.
Aloes Barb.,	℥j.	Barbadoes Aloes,	1 dr.
Sapo Mollis,	3ij.	Soft Soap,	2 dr.
Ol. Juniper,	3ss.	Oil of Juniper,	$\frac{1}{2}$ dr.
Massæ Comm.,	q.s.	Common Mass, as much as sufficient.	

*Misce, fiat Bolus.*

\* By Common Mass—*Massa Communis, Confectio Communis*—is meant a mixture of equal parts of linseeds and treacle, which constitutes a useful vehicle for the exhibition of medicines in the form of bolus.

4.

R

Hydrarg. Chloridi, gr. xv.	Calomel,	15 gr.
Aloes Cap., ℥ij.	Cape Aloes,	2 dr.
Mass. Comm., q.s.	Common Mass, as much as sufficient.	

*M.* Make into a ball, and exhibit one such daily for four or five days, diminishing the dose, or suspending it if purgation ensues.

5.

R

Antimonii Oxy. Sulph., ℥j.	Oxy. Sulphuret of Antimony,	1 oz.
Sulph., ℥iv.	Sulphur,	4 oz.
Pot. Nitr., ℥j.	Nitre,	1 oz.
Mellis, q.s.	Honey. As much as sufficient.	

*M.* Make into four balls for horse. Alterative and diuretic.

6.

R

Aloes Barb., ℥iv.	Barbadoes Aloes,	4 oz.
Saponis Mollis, ℥iv.	Soft Soap,	4 oz.
Massæ Comm., ℥xxiv.	Common Mass,	24 oz.

*M.* Make into 32 balls. Alterative for horse.

7.

R

Aloes, ℥jss.	Aloes,	1½ oz.
Sulphuris, ℥iijss.	Sulphur,	3½ oz.
Pulv. Zing., ℥ss.	Ginger,	½ oz.
Pulv. Lini, ℥ss.	Linseed Meal,	½ oz.

*M.* Make into 6 balls. Given in hidebound and skin diseases.

## 8.

R

Pulv. Antimonialis,	3j.	Antimonial Powder,	1 dr.
Aloes,	3j.-3ij.	Barbadoes Aloes,	1 dr.-2 dr.
Olei Tereb.,	3ij.-3ss.	Oil of Turpentine,	2 dr.- $\frac{1}{2}$ oz.
Pulv. Sem. Lini,	q.s.	Powd. Linseeds, as much	
		as sufficient.	

*M. Fiat Bolus.* An alterative for horse.

## 9.

R

Hydrargyri Chlor.,	3j.-3ij.	Calomel,	1-2 dr.
Massæ Comm.,	q.s.	Common Mass, as much as	
		sufficient.	

*M.* Given to horse over-night, and an aloetic purge the following morning. An anthelmintic.

## 10.

R

Limaturæ Ferri,	3ij.	Iron Filings,	2 dr.
Sodii Chlor.,	3ss.	Common Salt.	$\frac{1}{2}$ oz.
Pulv. Sabinæ,	3j.	Powdered Sayin,	1 dr.
Massæ Comm.,	3ss.	Common Mass,	$\frac{1}{2}$ oz.

*M.* To be given to horse every morning for a week, and then an aloetic purge. Against intestinal worms. (The pulverized clinker of the blacksmith and the sulphuret of iron may take the place of the iron filings.)

## 11.

R

Antim. Pot. Tart.,	3i-3ij.	Potassio Tartrate of Anti-	
		mony,	1-2 dr.
Massæ Comm.,	q. s.	Common Mass, as much as	
		sufficient.	

*M. Fiat Bolus.* Given to horse at night, an aloetic purge being administered the following morning. An

anthelmintic. (Others, with greater advantage, give the tartar emetic in doses of a drachm for six consecutive mornings, and always before the horse is fed; and, on the seventh day, a dose of physic is exhibited. Few worms, it is said, appear after this.—MORTON.)

12.

R.

Limaturæ Stanni,	℥j.	Tin Filings,	1 oz.
Tereb. Vulg.,	℥j.	Venice Turpentine,	1 oz.

M. Make into a ball with linseed meal, and give one such to horse for two or three consecutive nights, and then exhibit a brisk purge. A vermifuge.

13.

R.

Assafœtidæ,	℥ij.	Assafœtida,	2 dr.
Hydrargyri Chlor.,	℥ss.	Calomel,	1½ dr.
Pulv. Sabinæ,	℥jss.	Savin,	1½ dr.
Olei Fil. Maris,	℥ss.	Oil of Male Fern,	30 drops.
Massæ Comm.,	q.s.	Common Mass.	

M. Make into ball, to be given to horse at night, and exhibit purge the following morning. A vermifuge.

14.

R.

Olei Filicis Maris,	℥jss.	Oil of Male Fern,	1½ oz.
Pulv. Zing.,	℥ss.	Powdered Ginger,	½ oz.
Pulv. Sem. Lini,	q.s.	Powd. Linseeds,	as much as sufficient.

M. Make into a ball for horse, and repeat the dose daily, with the occasional addition of 2 drachms of Aloes. A vermifuge.

15.

R.

Hydrargyri Chlor.,	℥j.	Calomel,	1 dr.
Pulv. Absinthii,	℥j.	Powd. Wormwood,	1 oz.

Mellis,                      q.s. Honey, as much as sufficient.

*M.* Give to horse over-night, and an aloetic purge the following morning to effect the expulsion of worms.

## 16.

R

Aloes Barb.,                      3vj. Barbadoes Aloes,        6 dr.  
 Pulv. Fil. Maris,                3iv. Male Fern,                4 oz.  
 Tereb. Vulg.,                    3ij. Common Turpentine, 2 oz.

*M.* Make into six balls, with sufficient common mass, and exhibit two at a time, morning, noon, and night of one day.

## 17.

R

Pimentæ,                      pars j. Pimento,                1 part.  
 Massæ Comm.,                partes ij. Common Mass,    2 parts.

*M.* Give in ounce balls to horse. A carminative.

## 18.

R

Conf. Arom.,                    3ss. Aromatic Confection,  $\frac{1}{2}$  oz.  
 Pulv. Rhei,                      3ij. Powdered Rhubarb, 2 dr.  
 Pulv. Zingiber,                3ij. Powdered Ginger, 2 dr.  
 Sacchari Fæcis,                q.s. Treacle, as much as sufficient.

*M.* Fiat Bolus. Astringent and aromatic for horse.

## 19.

R

Pulv. Alum.,                    3ij. Alum,                      2 dr.  
 Cupri Sulph.,                   3j. Sulphate of Copper, 1 dr.  
 Pulv. Quassiaë,                3j. Quassia,                    1 dr.  
 Massæ Comm.,                3ss. Common Mass,             $\frac{1}{2}$  oz.

*M.* Fiat Bolus. For diarrhœa in the horse.

## 20.

R

Pulv. Opii,	3j.	Powdered Opium,	1 dr.
Pulv. Kino,	3ij.	Powdered Kino,	2 dr.
Cretæ Præp.,	3v.	Prepared Chalk,	5 dr.
Sacchari Fæcis,	q.s.	Treacle, as much as suffi-	
		cient.	

*M.* Fiat Bolus. .For diarrhœa in the horse.

## 21.

R

Argenti Nitratis,	gr. xxiv.	Nitrate of Silver,	24 gr.
Pulv. Opii,	3iv.	Powdered Opium,	4 dr.
Massæ Comm.,	3iv.	Common Mass,	4 oz.

*M.* Make into eight balls, and give two daily to horse affected with dysentery or chronic diarrhœa.

## 22.

R

Pulv. Quercus Cort.,	3j.	Oak Bark,	1 oz.
Pulv. Opii.	3j.	Powdered Opium,	1 dr.
Sacchari Fæcis,	q.s.	Treacle, as much as suffi-	
		cient.	

*M.* For diarrhœa in horses.

## 23.

R

Pulv. Gallæ,	3ij.	Nut galls,	2 dr.
Pulv. Quassiaë,	3j.	Quassia,	1 dr.
Massæ Comm.,	q.s.	Common Mass, as much as	
		sufficient.	

*M.* An astringent for horse.

## 24.

R

Plumbi Acetatis,	gr. xv.	Acetate of Lead,	15 gr.
Zinci Acet.,	3ss.	Acetate of Zinc,	$\frac{1}{2}$ dr.



Pulv. Cat.,	3ij.	Catechu,	3 dr.
Massæ Comm.,	q.s.	Common Mass, as much as sufficient.	

*M.* A ball, to be given daily in hæmaturia.

## 25.

℞

Pulv. Gallæ,	5j.	Powdered Gall Nuts,	1 dr.
Pulv. Opii,	5i.	Powdered Opium,	1 dr.
Conf. Comm.,	5iv.	Common Mass,	4 dr.

*M.* Fiat Bolus. Astringent for horse.

## 26.

℞

Pulv. Aluminis	5ij.	Alum,	2 dr.
Ferri Sulph.,	5ij.	Sulphate of Iron,	2 dr.
Conf. Comm.,	3ss.	Common Mass,	$\frac{1}{2}$ oz.

*M.* Fiat Bolus. Astringent for horse.

## 27.

℞

Acidi Tannici,	3ss.	Tannic Acid,	$\frac{1}{2}$ dr.
Pulv. Catechu,	5j.	Powered Catechu,	1 dr.
Pulv. Opii,	5j.	Powdered Opium,	1 dr.
Sacchari Fæcis,	q.s.	Treacle, as much as sufficient.	

*M.* Make into ball with a little common mass for horse.

## 28.

℞

Ext. Catechu,	3j.	Extract of Catechu,	1 oz.
Pulv. Cort. Cinnamoni,	3j.	Cinnamon Bark,	1 oz.
Conf. Comm.,	3vi.	Common Mass,	6 oz.

*M.* Give to horse in balls weighing an ounce each.

## 29.

℞

Pulv. Ammoniaci,	3ij.	Ammoniacum,	2 dr.
Pulv. Scillæ,	3j.	Powdered Squills,	1 dr.
Aloes,	3j.	Aloes,	1 dr.
Massæ Communis,	3iv.	Common Mass,	4 dr.

*M.* Useful in chronic coughs.

## 30.

℞

Antim. Pot. Tart.,	3ss.	Emetic Tartar,	$\frac{1}{2}$ dr.
Pulv. Digitalis,	3ss.	Digitalis,	$\frac{1}{2}$ dr.
Pot. Nitr.,	3jss.	Nitrate of Potash,	1 $\frac{1}{2}$ dr.
Pulv. Liquiritiæ,	3ij.	Powd. Liquorice,	2 dr.
Sacchari Fæcis,	q.s.	Treacle, as much as suffi-	
		cient.	

*Misce.* Febrifuge or cough-ball for horse.

## 31.

℞

Aloes Barb.,	3ij.	Barbadoes Aloes,	2 oz.
Pulv. Digitalis,	3j.	Digitalis,	1 oz.
Massæ Communis,	3xiii.	Common Mass,	13 oz.

*Misce.* Make into 16 balls; one to be given daily to horse with cough.

## 32.

℞

Camphoræ,	3j.	Camphor,	1 dr.
Ext. Belladonna,	3j.	Extract of Belladonna,	1 dr.
Ipecacuanhæ,	3i.	Ipecacuanha,	1 dr.
Massæ Comm.,	3iij.	Common Mass,	3 dr.

*Misce.* Cough-ball for horse.

## 33.

R

Pulv. Cantharides,	ʒi.	Powd. Cantharides,	1 scr.
Pulv. Digitalis,	ʒi.	Powd. Digitalis,	1 dr.
Saponis Mollis,	ʒiij.	Soft Soap,	3 dr.

*Misce.* Make into a ball for horse—stimulant diuretic.

## 34.

R

Camphoræ,	ʒij.	Camphor,	2 dr.
Pot. Nitr.,	ʒss.	Nitre,	$\frac{1}{2}$ oz.
Massæ Comm.,	ʒss.	Common Mass,	$\frac{1}{2}$ oz.

*M.* Diuretic ball for horse, used in cases of suppressed urinary secretion.

## 35.

R

Terebinth. Vulgaris,	ʒiv.	Common Turpentine,	4 oz.
Pulv. Scillæ,	ʒij.	Powdered Squills,	2 oz.
Saponis Mollis,	ʒii.	Soft Soap,	2 oz.
Pulv. Sem. Lini,	q.s.	Powd. Linseeds, as much	
		as sufficient.	

*M.* Make into 10 balls, with the addition of a little linseed-meal—a diuretic mass.

## 36.

R

Resinæ,	} a a partes equales.	Resin,	} of each equal parts.
Sapo. Mollis,		Soft Soap,	
Pot. Nitr.,		Nitre,	

*Misce. Dose.*  $\frac{1}{2}$  oz. to  $1\frac{1}{2}$  oz. Diuretic for horse.

## 37.

R

Pulv. Digitalis,	ʒj.	Powdered Digitalis,	1 dr.
Pot. Nitr.,	ʒij.	Nitre,	2 dr.
Massæ Communis,	ʒiv.	Common Mass,	4 dr.

*M.* Diuretic ball for the horse.

## 38.

℞

Ext. Juniperi,	} a a partes equales.	Extract of	} of each equal parts.
Sapo. Mollis,		Juniper, Soft Soap,	

*M.* Make into balls, weighing 1 oz. For horse.

## 39.

℞

Antim. Pot. Tart.,	3i.	Emetic Tartar,	1 dr.
Camphoræ,	3ss.	Camphor,	$\frac{1}{2}$ dr.
Pot. Nitr.,	3ij.	Nitre,	2 dr.
Confectio Communis,	3vi.	Common Mass,	6 dr.

*M.* Make into ball, and give once or twice a day.

## 40.

℞

Olei Tiglii,	gtt. iv.—	Croton Oil,	4—8 drops.
gtt. viii.			
Boli Aloet. Barb.	3iv.—	Aloetic Mass. (Barbadoes),	
3vi.		4—6 dr.	

*M.* Active purgative for horse.

## 41.

℞

Pulv. Alöes,	3iij.	Powdered Aloes,	3 dr.
Pulv. Gent.,	3iij.	Powdered Gentian,	3 dr.
Sacchari Fæcis,	q.s.	Treacle, as much as sufficient.	

*M.* A purgative for the horse.

## 42.

℞

Pulv. Alöes Cap.,	3iv.—	Powdered Cape Aloes,	4— 8 dr.
3viii.			

Saponis Mollis,	3iv.	Soft Soap,	4 dr.
Conf. Communis,	q.s.	Common Mass,	as much
			as sufficient.

*M.* Make into one or two balls, to be given as a purgative to the horse.

## 43.

R

Pulv. Alōes Barb.,	3ij.	Barbadoes Aloes in powder,	2 oz.
Potassæ Bitartratis,	3ij.	Cream of Tartar,	2 oz.
Pulv. Anisi,	3ss.	Aniseed,	$\frac{1}{2}$ oz.
Sacchari Faecis,	q.s.	Treacle, as much as sufficient.	

*M.* Make into four balls.

## 44.

R

Hydrargyri Chlor.,	3j.	Calomel,	1 dr.
Pulv. Alōes Barb.,	3v.	Powdered Barbadoes Aloes,	5 dr.
Sp. Vini Rect.,	3ij.	Spirits of Wine,	2 dr.
Massæ Communis,	3ij.	Common Mass,	2 dr.

*M.* A calomel purge for the horse.

## 45.

R

Pulv. Alōes,	partes iij.	Powdered Aloes,	3 parts.
Ferri Sulph.,	„ iij.	Sulphate of Iron,	3 parts.
Pulv. Zing.,	pars i.	Powdered Ginger,	1 part.
Massæ Comm.,	partes iij.	Common Mass,	3 parts.

*M. Dose.* 1—1 $\frac{1}{2}$  oz. for horses.

## 46.

℞

Acidi Arseniosi,	gr. x.	Arsenic,	10 gr.
Pulv. Zing.,	℥ij.	Ginger,	2 dr.
Conf. Comm.,	℥iv.	Common Mass,	4 dr.

*M.* Tonic ball for horse, much recommended in farcy and skin disease.

## 47.

℞

Cupri Sulphatis,	℥ss.	Sulphate of Copper,	$\frac{1}{2}$ dr.
Zinci Sulphatis,	℥ss.	Sulphate of Zinc,	$\frac{1}{2}$ dr.
Pulv. Anisi,	℥iij.	Aniseed,	3 dr.
Conf. Comm.,	℥iv.	Common Mass,	4 dr.

*M.* Tonic balls for horses in farcy and other diseases.

## 48.

℞

Ferri Sulph.,	℥iv.	Sulphate of Iron,	4 oz.
Pulv. Gentianæ,	℥iv.	Powdered Gentian,	4 oz.
Massæ Communis,	℥x.	Common Mass,	10 oz.

*M.* Dose for horse, 1 oz. to  $1\frac{1}{2}$  oz.

## 49.

℞

Limaturæ Ferri,	℥ss.	Iron Filings,	$\frac{1}{2}$ oz.
Potassæ Carb.,	℥ij.	Carbonate of Potash,	2 dr.
Pulv. Gent.,	℥ij.	Powdered Gentian,	2 dr.
Sacchari Fæcis,	q.s.	Treacle, as much as sufficient.	

*M.* Mild chalybeate for horse.

## 50.

℞

Pulv. Canth.,	gr. v.	Powdered Cantharides,	5 gr.
---------------	--------	-----------------------	-------

Ferri Sesquichloridi, ℥ss. Sesquichloride of  
 Iron,  $\frac{1}{2}$  oz.  
 Pulv. Cinnamoni, ʒij. Powdered Cinnamon, 2 dr.  
 Sacchari Fæcis, q.s. Treacle, as much as  
 sufficient.  
*Misce.* Fiat bolus. A tonic for horse.

## 51.

℞

Pulv. Aloës, ʒj. Powdered Aloes, 1 dr.  
 Pulv. Canth., gr. viii. Powdered Cantha-  
 rides, 8 gr.  
 Pulv. Rhei, ʒij. Powdered Rhubarb, 2 dr.  
 Pulv. Zingib., ʒj. Powdered Ginger, 1 dr.  
 Sacchari Fæcis, q.s. Treacle, as much as  
 sufficient.

*Misce.* Fiat bolus. A tonic for horse.

## 52.

℞

Quinæ Disulph., ʒj. Quinine, 1 dr.  
 Pulv. Gentianæ, ʒij. Powdered Gentian, 2 dr.  
 Conf. Comm., ʒiij. Common Mass, 3 dr.  
*Misce.* Fiat bolus—a tonic in hectic.

## 53.

℞

Ferri Carbonatis, ʒij. Carbonate of Iron, 2 dr.  
 Pulv. Rad. Gent., ʒij. Gentian, 2 dr.  
 Pulv. Quassia, ʒij. Quassia, 2 dr.  
 Sacchari Fæcis, q.s. Treacle, as much as  
 sufficient.

*Misce.* Fiat bolus. A tonic.

## 54.

℞

Pulv. Cort. Cinchonæ,	℥ss.	Powdered Cinchona,	$\frac{1}{2}$ oz.
Pulv. Quassiaë,	℥ss.	Powdered Quassia,	$\frac{1}{2}$ oz.
Pulv. Anisi,	℥ij.	Powdered Aniseed,	2 dr.
Sacchari Fæcis,	q.s.	Treacle, as much as	sufficient.

*Misce.* Fiat bolus. A tonic for horse.

## 55.

℞

Strychniaë,	gr. i.—gr. iv.	Strychnia,	1 gr.—4 gr.
Massæ Communis,	℥ss.	Common Mass,	$\frac{1}{2}$ oz.

*M.* In chorea and paralysis of the horse—give the one grain dose first, and then gradually augment to 4 grains.

## POWDERS.

## 56.

℞

Sodii Chlor.,	℥j.	Chloride of Sodium,	1 dr.
Antim. Sesquisulph.,	℥j.	Sesquisulphuret of	
		Antimony,	1 dr.

*M.* A mild alterative for lambs and calves, to be exhibited in their food.

## 57.

℞

Sulph.,	℥j.	Sulphur,	1 oz.
Antim. Sesquisulph.,	℥ss.	Sesquisulphuret of	
		Antimony,	$\frac{1}{2}$ oz.
Potassæ Nitratis,	℥ij.	Nitrate of Potash,	2 dr.

*M.* An alterative in the horse, to be given in the animal's food.



## 58.

℞

Pulv.

„ Semin. Sinap.,  
 „ Bacc. Junip.,  
 „ Rad. Calami arom.,  
 „ Semin. Fœnigræci,  
 „ Florum Sulph.,

Powd.

„ Mustard Seed,  
 „ Juniper Berries,  
 „ Sweet Flag,  
 „ Fœnigreek Seeds,  
 „ Flour of Sulphur,

} 4 oz. of each  
 }  
 } 6 oz. of each

*M.* To be added to 6 pounds of burned oats or malt, with 2 pounds of salts. Three or four tablespoonfuls to be given to horse or ox, and one little spoonful to sheep or pig, in asthenic disorders.

## 59.

℞

Sodii Chlor.,           ℥vi. Common Salt,           6 oz.  
 Pulv. Zing.,           ℥iv. Powdered Ginger,       4 oz.  
 Pulv. Rad. Gent.,   ℥ij. Powdered Gentian,   2 oz.

*M.* Half a tablespoonful to be given at each meal, to a horse or ox, with impaired appetite.

## 60.

℞

Antim. Sulph. Nigri,   ℥ij. Black Sulphuret of Antimony,       2 oz.  
 Pulv. Semin. Fœniculi, ℥iv. Powd. Fennel Seed,   4 oz.  
 Sodii Chloridi,       ℥iv. Common Salt,       4 oz.

*M.* The fourth part to be given as a dose in food. Useful in cases of deranged appetite, and when the secretion of milk in cows is checked.

## 61.

℞

Hydrarg. Chlor., gr. v. Calomel, 5 gr.  
 Pulv. Opii, gr. iv. Powd. Opium, 4 gr.

*M.* Suspended in thick gruel, and given to sheep daily  
 in liver affections.

## 62.

℞

Hydrargyri Chlor., ʒj. Calomel, 1 dr.  
 Pot. Sulph., ʒj. Sulphate of Potash, 1 oz.  
 Pulv. Seminis Lini, ʒj. Powdered Linseed, 1 oz.

*M.* To be given to horse in a quart of tepid water;  
 the mixture being well shaken. Recommended by Hert-  
 wig in enteritis, hepatitis, and nephritis.

## 63.

℞

Hydrarg. Chlo- Calomel, 3—6 gr.  
 ridi, gr. iij.—gr. vi.  
 Pulv. Rad. Jalapæ, ʒss. Jalap Powder,  $\frac{1}{2}$  dr.

*M.* To be given in food to dog as a purgative.

## 64.

℞

Hydrarg. Chloridi, Calomel,  
 Antim. Pot. Tart., āā gr. ij. Tartar Emetic, of  
 each, 2 gr.  
 Sacchari Albi Pulv., gr. x. Powdered White  
 Sugar, 10 gr.

*M.* To be given in food, or simply placed on the tongue  
 of dog or cat. An emetic and purgative in inflammatory  
 diseases, rheumatism, etc. etc.

E

## 65.

Pulv. Sem. Ricini,	3ij.	Powdered Castor Oil	
		Seeds,	3 dr.
Farinæ Secalinæ,	3viii.	Rye Flour in Pow-	
		der,	8 oz.

*M.* A purgative for the pig, to be exhibited in food. It is used as a vermifuge, or in cases of constipation due to atony.

## 66.

R

Antim. Pot. Tart.,	par. j.	Potassio-tartrate of Anti-	
		mony,	1 part.
Ipecac.,	} āā „ ij.	Ipecacuanha,	} of each
Veratri Albi,		White Hellebore,	

*M.* Pig, 1 scr.— $\frac{1}{2}$  dr.; dog, 4—8 gr. An emetic.

## 67.

R

Pulv. Rad. Hellebori		White Hellebore in	
Albi,	gr. vi.	Powder,	6 gr.
Sacchar. Albi Pulv.,	ʒj.	White Sugar in Pow-	
		der,	1 scr.

*M.* The whole for a large, and the half to a small dog, as an emetic—in indigestion.

## 68.

R

Hydrargyri cum		Grey Powder, 5 gr.—1 scr.
Cretæ,	gr. v—ʒj.	
Ipecacuanhæ, gr. j.—gr. iv.		Ipecacuanha, 1 gr.—4 gr.

*M.* Give thrice daily—when signs of approaching fits are manifested by dog with distemper.—MAYHEW.

**69.**

**B**

Antim. Pot. Tart.,	ʒij.	Tartar Emetic,	3 dr.
Antim. Sulph. Crudi,	ʒss.	Sulphuret of Anti-	
		mony,	½ oz.

**M.** To be divided into two doses, to be exhibited in water, or in a sloppy mash, to horse affected with catarrhal or inflammatory diseases.

**70.**

**B**

Sodii Chlor.,	3ij.	Chloride of Sodium,	2 dr.
Antim. Sesquisulph.,	3ij.	Sesquisulphuret of	
		Antimony,	2 dr.

*M.* An alternative for a sow, to be given in her food, especially if her young are constipated, or have scabby eruptions about the mouth.

**71.**

R

Pulv. Rad. Veratri	Powdered White Hel-
Albi, gr. ss.—ij.	lebre, $\frac{1}{2}$ gr.—2 gr.

**M.** Given in butter as an emetic to cat or dog.

**72.**

**R**

Pot. Sulph.,	ʒij.	Sulphate of Potash,	3 oz.
Pulv. Gent.,	ʒj.	Powdered Gentian,	1 oz.

*M.* To be given in a quart of warm water every half hour until purgation ensues—in colic, especially when associated with flatulency.—WALDINGER.

**73.**

**R**

**Pot. Sulphureti,            ʒj.    Liver of Sulphur,       1 dr.**

Sodæ Sulph.,                    ʒij. Sulphate of Potash, 2 oz.  
 Pulv. Rad. Gentianæ, ʒj. Powdered Gentian  
    Root,                    1 oz.

*M.* To be given to horse in a pint of cold water in inflammatory diseases associated with low fever, or having a tendency to gangrene.

74.

℞

Sodii Chlor.,                    ʒjss. Chloride of Sodium, 1½ dr.  
 Ferri Sulphatis,               ʒss. Sulphate of Iron,       ½ dr.

*M.* Make into a powder, to be given daily to a sheep affected with rot.

75.

℞

Ammoniæ Acetatis, ʒij. Acetate of Ammonia, 2 oz.

*M.* The acetate of ammonia may be given in the water a horse or ox drinks, or in a mash.

76.

℞

Pot. Iodidi,                    ʒj. Iodide of Potassium, 1 dr.  
 Hydrarg. Chlor.,               ʒij. Chloride of Mercury, 2 dr.  
 Pulv. Fol. Belladonnæ, ʒj. Powdered Belladonna, 1 oz.  
    „ Sacchari Albi, ʒij. „ White Sugar, 2 oz.

*M.* To be divided into four equal parts. To be placed on the tongue of horse or ox in cases of acute laryngopharyngitis, when there is much difficulty in swallowing.

77.

℞

Pulv. Rad. Bella-                    Powdered Belladonna  
    donnæ,                    ʒss. Root,                    ½ oz.  
 Sodæ Sulph.,                    ʒxii. Sulphate of Soda, 12 oz.

*M.* The sixth part to be given in food to horse or ox.

## 78.

℞

Antim. Sulph. Aurati, gr. j.	Golden Sulphuret of	
	Antimony,	1 gr.
Pulv. Opii, gr. ss.	Powdered Opium,	$\frac{1}{2}$ gr.
„ Fol. Digitalis	„ Leaves of	
„ Purp., gr. 10.	„ Foxglove,	10 gr.
„ Sacchari Albi, ʒj.	„ White Sugar,	1 scr.

*M.* To be divided into six powders; one to be given night and morning in dog's food, in cases of chronic cough, etc.

## 79.

℞

Pulv. Digitalis,	ʒj.	Powdered Foxglove,	1 scr.
„ Antimonialis,	ʒj.	Antimonial Powder,	1 scr.
Potassæ Nitratis,	ʒj.	Nitrate of Potash,	1 dr.

*M.* Make into twenty-four powders; one to be given daily to a dog for ascites.

## 80.

℞

Pot. Nitr.,	ʒj.	Nitrate of Potash,	1 oz.
Ferri Sulphatis,		Sulphate of Iron,	
Resin Com. Pulv.,	ʒss.	Common Resin, of each	$\frac{1}{2}$ oz.
Bacc. Juniperi Pulv.,	ʒij.	Juniper Berries in	
		powder,	2 oz.

*M.* To be made into four doses; one of which to be given night and morning in mash to horse.

## 81.

℞

Pot. Nitratis,	ʒiv.	Nitre,	4 oz.
Pulv. Scillæ,	ʒij.	Powdered Squills,	2 oz.

Pulv. Sem. Colchici, ʒij. Powdered Colchicum  
 Seeds, 2 oz.  
 Pulv. Cantharidum, ʒj. „ Cantharides, 1 oz.

*M.* From 6 to 8 drachms at a dose, as a diuretic, in horse and ox.

## 82.

R

Pot. Nitr., ʒiiss. Nitrate of Potash,  $1\frac{1}{2}$  oz.  
 Sodæ Nitr., ʒvi. Nitrate of Soda, 6 oz.

*M.* To be divided into six doses, to be given in a sloppy mash, or in gruel, to horse or ox affected with fever or acute inflammatory disease of the respiratory organs, etc.

## 83.

R

Pot. Nitr., ʒj. Nitrate of Potash, 1 oz.  
 Baccæ Juniperi Pulv., ʒiv. Powdered Juniper  
 Berries, 4 oz.

*M.* To be divided into four doses; one to be given thrice daily in food to horse. Useful in dropsies, skin diseases, etc.

## 84.

R

Pulvis Antim. Co., gr. xii. Antimonial Powder, 12 gr.  
 Pulv. Digital., gr. viii. Powdered Foxglove, 8 gr.  
 Pot. Nitr., ʒss. Nitre,  $\frac{1}{2}$  dr.

*M.* Divide into five, seven, or ten doses, according to size of dog, and give a dose night and morning in distemper when cough is very troublesome.—(BLAINE.)

**85.**

**R.** Ammoniae Hydrochlor., Hydrochlorate of Am-  
 3ss.—3j. monia,  $\frac{1}{2}$ —1 dr.  
 Pulv. Liquiritiae, 3ss. Liquorice Powder,  $\frac{1}{2}$  oz.  
*M.* Fiat pulv. To pig with pneumonia—exhibited  
 thrice daily.

**86.**

**R.** Antim. Pot. Tart., gr. Tartar Emetic, 2—4 gr.  
ij.—iv.  
Hydrargyri Chlor., gr. Calomel, 5—8 gr.  
v.—viij.  
*M.* Fiat pulv. Give three or four times daily to pig  
with inflammation of the lungs.—SPINOLA.

87.

**R.** Boracis, 3ij. Borax, 2 dr.  
Pulv. Digitalis, gr. v.—x. Powdered Digitalis, 5—  
10 gr.  
*M.* Thrice daily to pig with hydrothorax.—SPINOLA.

88.

R	Camphoræ,	gr. viii.—xii.	Camphor,	8—12 gr.
	Pulv. Anisi,	3ss.	Aniseed,	$\frac{1}{2}$ dr.
	Pulv. Zingib.,	3ss.	Ginger,	$\frac{1}{2}$ dr.

*M.* In affection of pig, associated with debility or in convalescent stage, after acute inflammatory diseases.

**89.**

**R.** Potassæ Chloratis, gr. j.— Chlorate of Potash, 1—  
gr. iv. 4 gr.  
Confectio Aromatici, 3ss.— Aromatic Confection,  $\frac{1}{2}$ —  
3ij. 2 dr  
*M.* Give in linseed tea to dog with diarrhœa.



## 90.

R

Magnesiaæ,	3iv.	Magnesia,	4 dr.
Pulv. Opii,	3j.	Powdered Opium,	1 scr.
Pulv. Rhei,	3ij.	Powdered Rhubarb,	2 dr.

*M.* To be given in milk or linseed gruel to calves and lambs affected with dysentery.

## 91.

R

Pulv. Camphoræ,	3ij.	Powdered Camphor,	2 dr.
Pulv. Rhei,	3iij.	Powdered Rhubarb,	3 dr.
Pulv. Opii,	3j.	Powdered Opium,	1 dr.

*M.* To be given in ale or wine to horse affected with diarrhœa.

## 92.

R

Cupri Sulph.,	3j.	Sulphate of Copper,	1 dr.
Pulv. Zing.,	3ss.	Powdered Ginger,	$\frac{1}{2}$ oz.

*M.* To be given twice daily, in ale or gruel, to horse or ox affected with diarrhœa.

## 93.

R

Hydrarg. Chlor.,	gr. x.	Calomel,	10 gr.
Cretæ Prep.,	3j.	Prepared Chalk,	1 oz.
Pulv. Opii,	3ij.	Powdered Opium,	2 dr.

*M.* Give in thick gruel twice a day. Recommended for dysentery in cattle. The medicine is to be suspended when symptoms of salivation present themselves.

## 94.

℞

Pulv. Cretæ Comp. cum      Compound Chalk Pow-  
 Opio,                      ℥iss.      der with Opium,      1 oz.  
 Pulv. Rad. Gent.,      ℥ss.      Powdered Gentian  
    Root,                      ½ oz.

*Misce.* Make into a ball with treacle, or exhibit in a pint of strong ale.—For diarrhœa in horses.

## 95.

℞

Pulv. Opii,                      ʒj.      Powdered Opium,      1 scr.  
 Pulv. Rhei,                      ℥ss.      Powdered Rhubarb,      ½ oz.  
 Pulv. Rad. Gent.,      ℥ss.      Powdered Gentian  
    Root,                      ½ oz.  
 Cretæ Prep.,                      ʒj.      Prepared Chalk,      1 oz.

*Misce.* Fiat pulvis. To be given in water or ale.—For foals with diarrhœa.

## 96.

℞

Pulv. Opii,                      gr. ij.      Powdered Opium,      2 gr.  
 Pulv. Gent.,      }      „      Gentian,      } of each  
 Pulv. Zingib.,      }      „      Ginger,      } 1 dr.

*M.* In an infusion of linseed.—For diarrhœa in sheep.

## 97.

℞

Acidi Gallici,                      ʒj—ʒj.      Gallic Acid,      1 scr.—1 dr.  
 Pulv. Opii,                      ℥ss.      Powdered Opium,      ½ dr.

*M.* An astringent in hæmoptysis, to be administered every four hours. Given in water or ale to horse or cattle. Proportionate doses will serve for other animals.

## 98.

℞

Pulv. Ergotæ,	℥j.	Ergot of Rye in Powder,	1 scr.
Pulv. Zing.,	℥ss.	Powdered Ginger,	$\frac{1}{2}$ dr.

*M.* To be given to a sheep in a pint of ale.

## 99.

℞

Pulv. Cretæ,	℥iv.	Powdered Chalk,	4 oz.
Pulv. Carbonis,	℥j.	„ Charcoal,	1 oz.
Pulv. Aluminis,	℥ss.	„ Alum,	$\frac{1}{2}$ oz.
Zinci Sulph.,	℥ss.	Sulphate of Zinc,	$\frac{1}{2}$ oz.

*M.* Sprinkled on ulcers in epizootic apthæ in cattle and sheep.

## 100.

℞

Pulv. Potassæ Caus-		Caustic Potash,	5 dr.
tici,	℥v.		
Pulv. Calcis Ustæ,	℥vi.	Quicklime,	6 dr.

*M.* To be well triturated in a covered mortar. It is very useful as a caustic. It may be used in powder, or made into a soft paste with spirit of wine.

## 101.

℞

Pulv. Corticis	}      ā ā    ℥j.	Powdered Oak	} of each
Quercus,		Bark,	
Pulv. Carbonis		Powdered Wood	
Ligni,		Charcoal,	
Hydrargyri Oxidi		Red Oxide of Mer-	
Rubri,	℥ij.	cury,	2 dr.

*M.* To be used for external purposes, especially as application to ulcers which freely suppurate.

## 102.

R

Pulv. Cortici	} ā ā 3j.	Powdered Oak	} of each
Quercus,		Bark,	
Aluminis Crudi,		Alum,	
Pulv. Carbonis Ligni,	3ss.	Wood Charcoal,	½ oz.

*M.* For external use, like the foregoing powder.

## 103.

R

Aluminis Siccati,	3vi.	Dried Alum,	6 oz.
Ferri Sulphatis,	3iij.	Sulphate of Iron,	3 oz.
Cupri Sulphatis,	3j.	Sulphate of Copper,	1 oz.
Camphoræ,	3ij.	Camphor,	2 dr.

*M.* A caustic powder for canker in the foot. One part of this powder may be added to from 3 to 6 parts of water, and used in solution on ulcers, etc.

## 104.

R

Sodæ Sulph.,	3iij.	Sulphate of Soda,	3 dr.
Pulv. Calcis Ustæ,	} ā ā 3x.	Quicklime,	} of each
Pulv. Amyli,		Starch,	

*M.* Depilatory powder. A little water is added to make the above into a pulpy mass, which is applied between the hairs over the part to be rendered bare. The paste is to be taken off the skin with a wooden spatula in from one to two minutes.—HERTWIG.

This is useful to prepare the skin for the application of adhesive plasters, etc., etc.

## MIXTURES.

105.

℞

Magnesiae Sulph.,	℥j.	Sulphate of Magnesia,	1 oz.
Potassae Nitr.,	℥ij.	Nitre,	2 dr.
Pulv. Zing.,	℥j.	Ginger,	1 dr.
Sp. Æther. Nitr.,	℥ij.	Sweet Spirits of Nitre,	2 dr.

*M.* Given in a quarter of a pint of water to sheep with epizootic aptha.

106.

℞

Magnesiae Sulph.,	℥ss.	Sulphate of Magnesia,	$\frac{1}{2}$ oz.
Tinct. Opii,	℥j.	Tincture of Opium,	1 dr.
Pulv. Camphoræ,	℥ss.	Powdered Camphor,	$\frac{1}{2}$ dr.

*M.* After abortion in ewes.

107.

℞

Ol. Lini,	℥ij.	Linseed Oil,	2 oz.
Ol. Terebinth.,	℥iv.	Oil of Turpentine,	4 dr.

*M.* A vermifuge for sheep.

108.

℞

Ol. Ricini,	℥j.	Castor Oil,	1 oz.
Tinct. Opii,	℥j.	Tincture of Opium,	1 dr.

*M.* A purge for sheep.

## 109.

℞

Ext. Hyoscyami,      ʒss.    Extract of Henbane,  $\frac{1}{2}$  dr.  
 Ol. Lini,              ʒij.    Linseed Oil,              2 oz.

*M.* In an infusion of linseed. Oleaginous laxative for sheep.

## 110.

℞

Ol. Crotonis,      gtt. xx.    Croton Oil,              20 drops.  
 Ol. Lini,              ʒxij.    Linseed Oil,              12 oz.

*M.* An oleaginous purge for horse.

## 111.

℞

Ol. Tereb.              ʒiv.    Oil of Turpentine,      4 oz.  
 Olei Lini.              ʒxvi.    Linseed Oil,              16 oz.

*M.* An oleaginous purge for horse. Used often as an anthelmintic, or in colic, with the addition of opium. In colic, I do not recommend it.

## 112.

℞

Olei Ricini,              ʒvi.    Castor Oil,              6 oz.  
 Ol. Croton. Tiglii, min. xii.    Croton Oil,              12 drops.

*M.* Given to horse in linseed tea.

## 113.

℞

Magnesiæ Sulph.,      ʒviii.    Epsom Salts,              8 oz.  
 Sulph.,              ʒiv.    Sulphur,              4 oz.  
 Pulv. Zing.,              ʒij.    Ginger,              2 dr.  
 Aquæ,              Oj.    Water,              1 pint.  
 Olei Lini,              ʒxii.    Linseed Oil,              12 oz.

*M.* Fiat Haustus. Purging drink for ox.

## 114.

R

Sodæ Sulph.,	℥xij.	Sulphate of Soda,	12 oz.
Sacchari Fæcis,	lb. j.	Treacle,	1 pound.
Aquæ,	Oij.	Water,	2 pints.
<i>M. Fiat Haustus. Laxative draught for ox.</i>			

## 115.

R

Magnesia Sulph.,	℥xii.	Epsom Salts,	12 oz.
Sol. Aloes,	℥iv.	Solution of Aloes,	4 oz.
Potassæ Carb.,	℥ss.	Carbonate of Potash,	$\frac{1}{2}$ oz.
Aquæ,	Oj.	Water,	1 pint.
<i>M. A purge for cattle.</i>			

## 116.

R

Sol. Aloes,	℥iv.	Solution of Aloes,	4 oz.
Sodæ Carb.,	℥ss.	Carbonate of Soda,	$\frac{1}{2}$ oz.
Ol. Lini,	℥xii.	Linseed Oil,	12 oz.
Aquæ,	q.s.	Water, as much as suffi-	cient.

*M. Purge for cattle.*

## 117.

R

Pulv. Sennæ,	℥j.	Powdered Senna,	1 dr.
Aq. Fervida,	℥iij.	Boiling Water,	3 oz.
Syr. Rhamni Cath.,	℥j.	Syrup of Buckthorn,	1 oz.

*M. An infusion of senna is to be first made by allowing the leaves to remain a little while in the boiling water, and the syrup is added afterwards. A useful purge for a dog.*

## 118.

℞

Pulv. Sennæ,	℥j.	Powdered Senna,	1 dr.
Aq. Fervidæ,	℥iv.	Boiling Water,	4 oz.
Magnesiae Sulph.,	℥ss.	Epsom Salts,	$\frac{1}{2}$ dr.

*Misce*, Secundum Artem. A useful purge for the dog.

## 119.

℞

Magnesiae Sulph.,	℥ij.	Sulphate of Mag-	
		nesia,	2 oz.
Pulv. Zing.,	℥j.	Ginger,	1 dr.
Pulv. Gent.,	℥ij.	Gentian,	2 dr.
Calcis Chlor.,	℥ss.	Chloride of Lime,	$\frac{1}{2}$ dr.

*M.* In a pint of warm water or gruel, as a purge for sheep.

## 120.

℞

Antim. Pot.		Tartar Emetic,	10—20 gr.
Tart.,	gr. x.—xx.		
Aquæ Distil.,	℥ij.—ij.	Distilled Water,	2—3 oz.
Pulv. Rad. Veratri		White Hellebore,	8—12 gr.
Albi,	gr. viii.—xii.		

*M.* From one to two tablespoonfuls to pig to excite vomiting; and the medicine may be repeated in half doses.

—SPINOLA.

## 121.

℞

Syr. Rhamni		Syrup of Buck-	
Cath.,	℥j.—℥jss.	thorn,	1—1 $\frac{1}{2}$ oz.
Syr. Papaveri,	℥ij.	Syrup of Poppies,	2 dr.

*M.* An aperient for dogs. Half the above doses of syrup of buckthorn may be used for cats.



## 122.

℞

Assafœtida,	3ij.—3vi.	Assafœtida,	2—6 dr.
Ol. Lini,		Oj. Linseed Oil,	1 pint.

*M.* In flatulent colic in horse, or hoven in cattle.

## 123.

℞

Tinct. Assafœ-		Tincture of Assa-	
tidæ,	3ij.—3iv.	fœtida,	2—4 oz.
Tinct. Opii,	3ss.	Tincture of Opium,	$\frac{1}{2}$ oz.

*M.* In flatulent colic in the horse.

## 124.

℞

Antim. Pot. Tart.,	3ij.	Tartar Emetic,	2 dr.
Flor. Sulph.,	3j.	Sulphur,	1 oz.
Sodæ Sulph.,	3iij.	Sulphate of Soda,	3 oz.
Ol. Tereb.,	3ss.	Oil of Turpentine,	$\frac{1}{2}$ oz.

*M.* To be given in linseed gruel, two or three days in succession, in hidebound in cattle.

## 125.

℞

Creosoti,	f3ss.	Creosote,	$\frac{1}{2}$ dr.
Acid. Acetici,	f3ij.	Acetic Acid,	2 oz.
Aquæ,	f3xii.	Water,	12 oz.

*M.* To be given daily in diuresis in the horse.

## 126.

℞

Potassii Iodidi,	3i.	Iodide of Potassium,	1 dr.
Aquæ,	3x.	Water,	10 oz.

*M.* To be given daily to horses affected with diuresis.

## 127.

R

Tinct. Aconiti, (Flem.,) Fleming's Tincture of Aconite, 10 drops.

M. x. Gum Mixture, 8 oz.

Miscæ. To be given twice daily to cattle affected with epizootic dysentery.

## 128.

R

Pulv. Opii, 3ss. Powdered Opium,  $\frac{1}{2}$  dr.

Camphoræ, 3ij. Camphor, 2 dr.

Ether Sulph., 3j. Sulphuric Ether, 1 oz.

M. For horse or cattle affected with dysuria, given in cold linseed tea or gruel.

## 129.

R

Liq. Amm. Fort., 3ss. Strong Solution of Ammonia,  $\frac{1}{2}$  oz.

Aquæ, Oj. Water, 1 pint.

M. For flatulence in the horse, or hoven in cattle.

## 130.

R

Antim. Sulph. Au- Golden Sulphuret of Antimony, 2 dr.

Camphoræ, 3ij. Camphor, 2 dr.

Aceti Dil., 3iv. Weak Vinegar, 4 oz.

M. Fiat Haustus. To be given daily in gruel till the secretion of milk is restored. For suppressed secretion of milk in mare or cow.

## 131.

℞

Tinct. Opii,	℥ss.	Tincture of Opium,	$\frac{1}{2}$ oz.
Liq. Ammon. Acet.,	℥iv.	Solution of Acetate of Ammonia,	4 oz.

*M.* For horse or ox. To be repeated daily, or twice daily. Use the same in proportionate doses for sheep, dog, or swine.

## 132.

℞

Ext. Belladonnæ,	℥j.	Extract of Bella- donna,	1 dr.
Sp. Ether. Nitr.,	℥j.	Spirits of Nitric Ether,	1 oz.
Liq. Amm. Acet.,	℥iv.	Solution of Acetate of Ammonia,	4 oz.

*M.* Febrifuge, or sedative draught for horse.

## 133.

℞

Tincturæ Aloës,	℥iv.	Tincture of Aloes,	4 oz.
Sp. Ether. Nitr.,	℥j.	Spirits of Nitric Ether,	1 oz.
Aquæ,	Oj.	Water,	1 pint.

*Misce.* In spasmodic colic in the horse.

## 134.

℞

Tinct. Opii,	℥j.	Tincture of Opium,	1 oz.
Sp. Amm. Aromat.,	℥ss.	Aromatic Spirit of Amm.,	$\frac{1}{2}$ oz.
Ext. Belladonnæ,	℥j.	Extract of Belladonna,	1 dr.
Aquæ,	q.s.	Water, as much as sufficient.	

*Misce, fiat haustus.* Antispasmodic draught for horse.

## 135.

℞

Sp. Ether. Nitr.,	℥vi.	Nitric Ether,	6 oz.
Acidi Acetici,	℥ij.	Acetic Acid,	2 oz.

*Misce.* A wine-glassful night and morning in red water, after parturition in cows. A purgative to be given at first.

## 136.

℞

Acid. Acetici Diluti,	℔j.	Vinegar,	1 pound.
Sp. Vini Dil.,	℔j.	Proof Spirit,	1 pound.
Ammoniã Hydrochlor.,	℥jss.	Hydrochlorate of Ammonia,	1½ oz.
Infusi Absinthii Fort.,	℔iv.	Infusion of Worm-wood,	4 pounds.

*M. Viborg* recommends this in four ounce doses for pig with malignant sore throat.

## 137.

℞

Pot. Sulph.,	℥ij.	Sulphate of Potash,	2 oz.
Pulv. Anthem.,	℥j.	Chamomile Powder,	1 oz.
Sapo. Mollis,	℥ij.	Soft Soap,	2 dr.
Olei Tereb.,	℥ij.	Oil of Turpentine,	2 dr.

*M.* Recommended in cases of gravel and dysuria. To be given in linseed tea.

## 138.

℞

Potassii Nitratis,	℥iv.	Nitre,	4 dr.
Pulv. Opii,	℥ij.	Opium in Powder,	2 dr.
Acidi Hydrocyanici Dil.,	℥j.	Dilute Prussic Acid,	1 dr.
Mist.-Acaciã,	℥j.	Miscilage,	1 pint.

*M.* Half a tumbler morning, noon, and night to horse with inflammatory affections of the respiratory passages or influenza.

## 139.

℞

Camphoræ,	℥iss.	Camphor,	1½ dr.
Ext. Hyoscyami,	℥j.	Extract of Henbane,	1 dr.
Tinct. Arnicæ,	℥℥ss.	Tincture of Arnica,	1½ oz.

*M.* A dessert-spoonful thrice daily in distemper.

## 140.

℞

Pulv. Digitalis,	gr. x.	Powdered Foxglove,	10 gr.
Tinct. Scillæ,	℥℥ij.	Tincture of Squills,	2 dr.
Tinct. Arnicæ,	℥℥ss.	Tincture of Arnica,	½ oz.

*M.* A dessert-spoonful thrice daily to dog affected with distemper, especially if the respiratory organs are most implicated.

## 141.

℞

Camphoræ,	℥ss.	Camphor,	½ dr.
Tinct. Valerianæ,	℥iv.	Tinct. of Valerian,	4 oz.

*M.* A table-spoonful night and morning to dog with distemper.

## 142.

℞

Magnesia,	℥ss.	Magnesia,	½ oz.
Liq. Amm. Fort,	℥j.	Strong Solution of Ammonia,	1 dr.

*M.* An antacid in dysentery in lambs. Given in water.

## 143.

℞

Aquæ Calcis,	℥x.	Lime Water,	10 oz.
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*M.* Given daily to sheep affected with filaria bronchi. Half the above dose will suffice for a lamb.—MAYER.

## 144.

R

Pot. Nitr,	3j.	Nitre,	1 dr.
Pulv. Digitalis,	3j.	Digitalis,	1 scr.
Antim. Pot. Tart.,	3j.	Tartar Emetic,	1 scr.

*M.* In linseed tea; given daily to sheep affected with pneumonia.

## 145.

R

Camphoræ,	3ss.	Camphor,	$\frac{1}{2}$ dr.
Tinct. Opii,	3ss.	Tincture of Opium,	$\frac{1}{2}$ oz.

*M.* To be given with gruel to ewe with heaving pains.  
—SPOONER.

## 146.

R

Potassii Iodidi,	3ijss.	Iodide of Potas-	
		sium,	$2\frac{1}{2}$ dr.
Liq. Potassæ,	3jss.	Solution of Potash,	$1\frac{1}{2}$ oz.
Syrupi Simpl.,	f3vi.	Simple Syrup,	6 oz.
Aquæ,	f3xiiss.	Water,	$12\frac{1}{2}$ oz.

*M.* From half a tea-spoonful to a tea-spoonful to dog with chronic hepatitis.—MAYHEW.

## 147.

R

Camphoræ,	3ij.	Camphor,	2 dr.
Ether Sulph.,	3ss.	Sulphuric Ether,	$\frac{1}{2}$ oz.
Liq. Amm. Acet.,	3vi.	Acetate of Ammonia,	6 oz.

*M.* For horse or cattle in the asthenic form of enzootic dysentery.

## 148.

R

Liq. Potassæ,	℥j.	Solution of Potash,	1 oz.
Vini Ipecac.,	℥j.	Ipecacuanha Wine,	1 oz.
Pulv. Opii,	℥j.	Powdered Opium,	1 dr.
Tinct. Canth.,	℥ss.	Tincture of Cantharides,	$\frac{1}{2}$ oz.

*M.* Recommended to be given to ox in a quart of warm gruel in dysentery.

## 149.

R

Calcis Chlor.,	℥ij.	Chlorinated Lime,	2 dr.
Tinct. Arnicae,	℥ij.	Tincture of Arnica,	2 dr.
Ether Nitr.,	℥j.	Nitric Ether,	1 oz.

*M.* To be given twice or thrice daily to cattle affected with dysentery.

## 150.

R

Ext. Opii,	℥ij.	Extract of Opium,	2 dr.
Decocti Amyli,	Oij.	Starch Emulsion,	a quart.

*M.* This may be exhibited as a draught, or as a clyster, in cases of diarrhœa in horse or cattle.

## 151.

R

Pulv. Aluminis,	℥ss.	Alum,	$\frac{1}{2}$ oz.
Lactis,	Oiv.	Milk,	2 quarts.

*Misce.* Boil for ten minutes and strain. Recommended in diarrhœa—to be administered twice every day.

## 152.

R

Pulv. Aluminis,	℥j.	Alum,	1 oz.
Acidi Sulph. dil.,	℥j.	Dilute Sulphuric Acid,	1 oz.
Mellis,	℥ij.	Honey,	2 oz.
Aquæ,	Oj.	Water,	1 quart.

*M.* An astringent gargle.

## 153.

R

Quercus Cort.,	} ā ā	℥ss.	Oak Bark,	} of each ½ oz.
Cinchonæ,		℥ss.	Cinchona,	
Sp. Vini Camph.,	} ā ā	℥ij.	Camph. Spirit,	} of each 2 dr.
Sodii Chlor.,		℥ij.	Common Salt,	
Aquæ,		Oj.	Water,	1 pint.

*M.* To inject into the mouth and use as a gargle.

## 154.

R

Pulv. Opii,	℥j.—℥ij.	Powdered Opium,	1—2 dr.
Cretæ Prep.,	℥ss.—℥jss.	Prepared Chalk,	½—1½ oz.
Decocti Amyli,	℥viii.—℥xii.	Starch Emulsion,	8—12 oz.

*Misce*, fiat haustus. Give thrice daily to a horse with diarrhœa.

## 155.

R

Pulv. Cretæ Comp. cum	Compound Chalk Pow-
Opio,	der with Opium, 2 dr.
Pulv. Rad. Gent.,	℥ss. Powdered Gentian
	Root, ½ dr.
Aq. Menthæ Pip.,	℥j. Peppermint Water, 1 oz.
Decocti Amyli,	℥ij. Starch Emulsion, 2 oz.

*Misce*, fiat haustus. Give morning and night to lambs affected with diarrhœa.



## 156.

R

Acid. Tannici,	3ss.	Tannic Acid,	$\frac{1}{2}$ dr.
Pulv. Rad. Gent.,	3ij.	Powdered Gentian,	3 dr.
Aquæ,	3iv.	Water,	4 oz.

*Misce*, fiat haustus. Tonic astringent draught for horse.  
To be exhibited with ale or wine.

## 157.

R

Copaibæ,	3jss.	Copaiba,	1 $\frac{1}{2}$ oz.
Infusi Sem. Lini,	3xii.	Linseed Tea,	12 oz.

*Misce*, fiat haustus. Recommended by Field in hepaticorrhœa.

## 158.

R

Hydrargyri Chlor.,	3ss.	Calomel,	$\frac{1}{2}$ dr.
Pulv. Alœes,	3ij.	Aloes,	2 dr.
Pulv. Rad. Gent.,	3ij.	Gentian,	2 dr.
Pulv. Opii,	3ss.	Opium,	$\frac{1}{2}$ dr.
Aquæ,	Oj.	Water,	1 pint.

*Misce*. In chronic diarrhœa.

## 159.

R

Ovi Albuminis,	pars j.	White of Egg,	1 part.
Aquæ,	partes vi.	Water,	6 parts.

*Misce*. In diarrhœa in lambs, dog, or pig.—*Ad libitum*.

## 160.

R

Tinct. Opii,	gtt. vi.—x.	Tincture of Opium,	6— 10 drops.
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Ovi Albuminis,	3j.	White of Egg,	1 oz.
Aquæ,	3iv.	Water,	4 oz.

*Misce*. To pig or dog affected with diarrhœa.

## 161.

℞

Pulv. Opii, gr. ss.—gr. ij. Powdered Opium,  $\frac{1}{2}$ —  
2 gr.  
Confectio Aromaticæ, ℥ss. Aromatic Confection,  
—℥j.  $\frac{1}{2}$ —1 dr.  
Infusi Lini, ℥iv. Infusion of Linseed, 4 oz  
*M.* To pig affected with diarrhœa.

## 162.

℞

Tinct. Catechu Comp., ℥ij. Compound Tincture of  
Catechu, 2 dr.  
Conf. Aromat., ℥j. Aromatic Confection, 1 dr.  
Tinct. Opii, ℥jss. Tincture of Opium,  $1\frac{1}{2}$  dr.  
Mist. Cretæ, ℥iv. Chalk Mixture, 4 oz.  
*Misce.* For foals or calves affected with diarrhœa.

## 163.

℞

Tinct. Catechu Comp., ℥j. Compound Tincture of  
Catechu, 1 dr.  
Conf. Aromaticæ, ℥j. Aromatic Confection, 1 scr.  
Inf. Catechu Comp., ℥j. Compound Infusion of  
Catechu, 1 oz.  
*Misce, fiat haustus.* To be given twice or thrice daily  
to calves or lambs affected with diarrhœa.

## 164.

℞

Cretæ Præp., ℥j. Prepared Chalk, 1 oz.  
Pulv. Catechu, ℥ss. Powdered Catechu,  $\frac{1}{2}$  oz.  
Pulv. Zing., ℥ij. Ginger, 2 dr.  
Pulv. Opii, ℥ss. Powdered Opium,  $\frac{1}{2}$  dr.  
Aq. Menthæ Pip., Oss. Peppermint Water,  $\frac{1}{2}$  pint.

*M.* Two or three table-spoonfuls given morning and night to sheep with diarrhoea, and half the quantity to lambs.—SPOONER.

## 165.

℞

Tinct. Cinnamomi	Compound Tincture of	
Comp.,	℥ij.	Cinnamon, 3 oz.
Acidi Sulphurici Diluti, ℥v.	Dilute Sulphuric	
	Acid,	5 oz.

*Misce.* Two table-spoonfuls to be given to mare or cow in a quart of water every three hours, in case of flooding.

## 166.

℞

Acidi Gallici,	℥ij.	Gallic Acid,	2 dr.
Aquæ,	℥vi.	Water,	6 oz.

*Misce.* An astringent mixture, to be exhibited in gruel in hæmorrhage.

## 167.

℞

Tinct. Ferri Sesqui-	Tincture of the Sesqui-	
chloridi,	℥j.	chloride of Iron, 1 scr.
Infusi Cinchonæ,	℥j.	Infusion of Cinchona, 1 oz.

*M.* A table-spoonful to be taken every four hours in hæmaturia—dog.

## 168.

℞

Argenti Nitratis,	gr. iv.	Nitrate of Silver,	4 gr.
Aquæ Distil.,	℥ij.	Distilled Water,	3 oz.

*Misce.* To be given in cold boiled water twice daily, in dysentery, in smaller ruminants; viii. to xii. gr. for horse and cattle.—HERTWIG.

**169.**

**R**

Zinci Acetatis,	3j.—3ij.	Acetate of Zinc,	1—2 dr.
Tinct. Gent.,	3j.—3ij.	Tincture of	
		Gentian,	1—2 oz.
Decocti Amyli,	Oij.	Starch Emulsion,	2 pints.
<i>M.</i> In diarrhoea in horse or cattle.			

170.

**R**

Acidi Sulph. Dil., ʒj.—ʒij.	Dilute Sulphuric Acid, 1—2 dr.
Tinct. Opii, ʒss.—ʒj.	Tincture of Opium, ½—1 oz.
Decocti Cinchonæ, Oj.	Decoction of Cinchona, 1 pint.

**M.** To be given in ale in simple diarrhoea affecting horse or cattle.

171.

**B**

Tinct. Hyoscyami, pars j. Tincture of Henbane,  
1 part.

**Æther Sulph., partes iij. Sulphuric Æther, 3 parts.**

**M.** One ounce of the medicine to be added to ten ounces of cold soup. *Dose.* 1—4 oz. for dog when fits threaten in distemper.—**MAYHEW.**

172.

**R**

**Tinct. Opii,**    gtt. v.—xx.    **Tincture of Opium,**    5—  
  20 drops.

**Æther Sulph., 3ss.—3ij. Sulphuric Æther,  $\frac{1}{2}$ —2 dr.**

*M. Antispasmodic draught for dog. Given in cold gruel or soup.*

## 173.

℞

Acidi Sulphurici,	℥j.	Sulphuric Acid,	1 dr.
Tinct. Opii,	℥ss.	Tincture of Opium,	$\frac{1}{2}$ oz.
Sacchari Fæcis,	℥iv.	Treacle,	4 oz.
Aquæ,	Oj.	Water,	1 pint.

*M.* Given daily in warm gruel, in cases of red water in cows.

## 174.

℞

Sodæ Carb.,	℥j.	Carbonate of Soda,	1 oz.
Pot. Nitr.,	℥ij.	Nitrate of Potash,	2 dr.
Amm. Carb.,	℥ss.	Carbonate of Ammonia,	$1\frac{1}{2}$ dr.
Aquæ,	q.s.	Water, as much as sufficient.	

*Misce*, fiat haustus. Antacid and diuretic draught for horse.—A febrifuge.

## 175.

℞

Tinct. Opii,	℥j.	Tincture of Opium,	1 oz.
Vin. Antim. Pot. Tart.,	℥ij.	Antimonial Wine,	2 oz.
Potassæ Nitr.,	℥ss.	Nitrate of Potash,	$\frac{1}{2}$ oz.
Aquæ Distil.,	℥viii.	Distilled Water,	8 oz.

*Misce*, fiat haustus. To be exhibited to horse in linseed tea.

## 176.

℞

Tereb. Vulg.,	℥ss.	Common Turpentine,	$\frac{1}{2}$ oz.
Acidi Hydrochlorici,	℥j.	Hydrochloric Acid,	1 scr.
Pulv. Zing.,	℥ij.	Powdered Ginger,	2 dr.
Decocti Quercus Cort.,	℥x.	Decoction of Oak Bark,	10 oz.

*Misce*, fiat haustus.

## 177.

℞

Potassæ Chlor.,	℥ss.	Chlorate of Potash,	$\frac{1}{2}$ oz.
Aquæ,	℥vi.	Water,	6 oz.
Æther Sulph.,	℥ss.	Sulphuric Æther,	$\frac{1}{2}$ oz.

*Misce.* Given in gruel in cases of tympanitis in horse or cattle.

## 178.

℞

Sodæ Chlorin.,	℥ss.	Chlorinated Soda,	$\frac{1}{2}$ oz.
Sol. Aloës,	℥iv.	Solution of Aloes,	4 oz.
Aquæ,	Oj.	Water.	1 pint.

*Misce.* Useful in second stages of tympanitis.

## 179.

℞

Pulv. Colchici,	℥j.	Colchicum,	1 dr.
Liq. Amm. Fort.,	℥j.	Liq. Ammonia,	1 oz.
Aquæ,	Oj.	Water,	1 pint.

*M.* Given in a quart of linseed tea, or other mucilaginous draught. A useful drink in hoven in cattle.

## 180.

℞

Calcis Chlorinatæ,	℥ss.	Chlorinate Lime,	$\frac{1}{2}$ oz.
Aquæ,	Oj.	Water,	1 pint.

*M.* In second stages of hoven in cattle.

## 181.

℞

Sodæ Sulph.,	℥ij.—℥vi.	Glauber's Salt,	2—6 dr.
Pot. Nitr.,	℥j.—℥ij.	Nitre,	1—2 dr.
Aquæ,	℥iv.	Water,	4 oz.

*M.* A table-spoonful every four hours to pig, in case of catarrh with fever.

## 182.

℞

Potassii Iodidi,	gr. xv.—	Iodide of Potassium,	15
3j.		gr. to 1 dr.	
Syrupi Simpl.,	f℥ij.	Simple Syrup,	2 oz.
Aquæ,	f℥vi.	Water,	6 oz.

*M.* A tea-spoonful thrice daily to dog with bronchocele, enlarged mammæ or testicles.

## 183.

℞

Potassii Iodidi,	gr. x.—3j.	Iodide of Potassium,	10
		gr. to 1 dr.	
Tinct. Canth.,	gtt. v.—3j.	Tincture of Cantharides,	5
		—20 drops.	
Syrupi Simpl.,	3j.	Simple Syrup,	1 dr.
Aquæ,	3ij.	Water,	2 oz.

*M.* A tea-spoonful three times a day to dog in cases of dropsy, especially to bitch in dropsy of uterus.—MAYHEW.

## 184.

℞

Creosoti,	3j.	Creosote,	1 dr.
Liq. Amm.,	℥ss.	Solution of Ammonia,	$\frac{1}{2}$ oz.
Aquæ,	℥viii.	Water,	8 oz.

*M.* A stimulant in pleuropneumonia, etc.

## 185.

℞

Acidi Hydrochlori,	} aa 3ss.	Hydrochloric	} of each
Acidi Nitrici,		Acid,	
Aquæ,	3x.	Nitric Acid,	$\frac{1}{2}$ dr.
Misce, fiat haustus.		Water,	10 oz.
To be given thrice daily in ale.			

## 186.

℞

Sp. Æth. Nit.,	℥ss.	Nitric Æther,	½ oz.
Tinct. Rhei,	℥ij.	Tincture of Rhubarb,	2 oz.
Tinct. Zingib.,	℥ss.	Tincture of Ginger,	½ oz.
Aquæ,	Oj.	Water,	1 pint.

*Misce*, fiat haustus. Stimulant and aromatic draught—to be repeated thrice daily.

## 187.

℞

Ferri Sulph.,	℥ij.	Sulphate of Iron,	2 dr.
Tinct. Zingib.,	℥j.	Tincture of Ginger,	1 oz.
Aquæ,	℥xij.	Water,	12 oz.

*Misce*. Tonic draught to be given daily.

## 188.

℞

Quinæ Disulph.,	℥ss.	Quinine,	½ dr.
Acid. Sulph.,	℥ss.	Sulphuric Acid,	½ dr.
Aquæ,	℥xii.	Water,	12 oz.

*Misce*. Given daily in warm gruel.

## 189.

℞

Limaturæ Ferri,	℥ss.	Iron Filings,	½ oz.
Mang. Sesquioxidi,	℥ss.	Sesquioxide of Manganese,	½ oz.
Tinct. Gent.,	℥jss.	Tincture of Gentian,	1½ oz.
Aquæ,	Oj.	Water,	1 pint.

*M.* Given daily in gruel to ox with pleuropneumonia, or in cases of debility. Tonic draught for horse.



**190.**

**R**

Tinct. Ferri Sesquichlor.,	Tincture of the Sesqui-
℥ss.	chloride of Iron, ½ oz.
Aquæ,	Water, 8 oz.
℥viij.	

**M.** To destroy ascarides in the dog ; a dose of calomel and jalap being administered at the same time.

191.

**R**

Liquor Pot. Arsenitis, f3ss.	Fowler's Solution,	½ oz.
Syr. Zingib., f3jss.	Syrup of Ginger,	1½ oz.
Aquæ Distil., f3xx.	Distilled Water,	20 oz.

*M.* A table-spoonful of the mixture to be given thrice daily to dog affected with red mange.

## 192.

B.

Salicin,	gr. ij.—gr. x.	Salicin,	2—10 gr.
Infusi Gent.,	fʒij.—ʒvii.	Infusion of Gentian,	3—
			7 ounces.

Syrupi Ferri Iodidi, f3j. Syrup of the Iodide of  
Iron, 1 oz.

**M.** A dessert-spoonful to dog thrice daily. Tonic in convalescence from acute affections of alimentary canal.

193.

**R**

Quinæ Arseniatis,	gr. j.	Arseniate of Quinine, 1 gr.
Aquæ Distil.,	℥vi.	Distilled Water, 6 oz.
Syr. Florum Aurantii, f3iv.		Syrup of Orange Flowers,
		4 dr.

*M. Fiat haustus.* A dessert-spoonful every six hours to dog with intermittent or bilious fever.

## 194.

R

Ferri Ammonio-Citratis, ʒj. Ammonio-Citrate of Iron,  
—3j. 1 scr.—1 dr.

Aquæ Distillatæ, fʒvii. Distilled Water, 7 oz.

Syrupi Comm., fʒj. Common Syrup, 1 oz.

*M.* Fiat Misturæ. A large spoonful thrice a day to dog.  
A mild ferruginous tonic.

## 195.

R

Nucis Vomica, ʒj.—3jss. Vomic Nut, 1—1½ dr.

Antim. Pot. Tart., ʒss. Emetic Tartar, ½ oz.

Sodæ Sulphatis, ʒxvi. Sulphate of Soda, 16 oz.

Sodii Chlor., ʒiv. Chloride of Sodium, 4 oz.

*M.* To be dissolved in a gallon of water, made to simmer on the fire for a quarter of an hour, and half a pint to be administered to cow with parturient apoplexy every one or two hours.—KOHNE.

## 195 a.

R

Strychniæ, gr. ij. Strychnia, 2 gr.

Spiriti Rect., fʒss. Rectified Spirit, ½ oz.

Acid. Sulphur., gutt. iv. Sulphuric Acid, 4 drops.

*M.* Fiat solutionem. To be applied by the endermic method. Every ten drops of the solution contains ⅛th of a grain of the salt of strychnia. It may be used in quantities appropriate for each particular animal.

## 196.

R

Secalis Corn. Pulv., ʒiij. Powd. Ergot of Rye, 3 dr.

Cortic. Peruv. Pulv., ʒvi. Powdered Peruvian Bark,  
6 oz.

Ol. Juniperi, ʒss. Oil of Juniper, ½ oz.

G



## 201.

℞

Liq. Arsenicalis (Mayhew),   Arsenical Solution,   10—  
   gtt. x.—gtt. xx.                   20 drops.  
 Syrupi,                           ℥ij.   Common Syrup,       2 oz.  
*M.* A tea-spoonful thrice daily to dog.

## 202.

℞

Guaiaci Ligni Basi,   ℥ij.   Guaiacum,               2 oz.  
 Sassafras Rad.,       ℥j.   Sassafras Root,       1 oz.  
 Aquæ Distillatæ,   ℔ ij.   Distilled Water, 2 pounds.

*M.* Boil by a gentle heat to one pound; let two drachms of bruised liquorice root be added toward the end of the coction, and strain—to be given in two doses night and morning. A useful expectorant in proportionate doses for all animals.

## ELECTUARIES.

## 203.

℞

Hydrarg. Chloridi,   ℥ij.   Calomel,               2 dr.  
 Sodæ Sulphatis,     ℥xij.   Sulphate of Soda,   12 oz.  
 Pulv. Sem. Lini,     ℥ij.   Powdered Linseed,   2 oz.  
 Aquæ Fontanæ, q. s. ut fiat   Spring Water, as much as  
   electuarium.                   sufficient to make an  
   electuary.

*M.* The fourth part to be given at a dose in inflammatory diseases of lungs and liver, etc.

## 204.

℞

Hydrarg. Chloridi,	℥ij.	Calomel,	2 dr.
Ext. Hyoscyami,	℥ij.	Extract of Henbane,	2 dr.
Pulv. Sem. Lini,	℥ij.	Powdered Linseed,	2 oz.
Misce cum Aqua Commun.	Mix with sufficient Com-		
quantum sufficit ad elec-	mon Water to make an		
tuar.	electuary.		

The fourth part to be given every fourth hour, in inflammation of the lungs, with painful cough, in nephritis.—  
HERTWIG.

## 205.

℞

Ammonii Hydrochl.,	℥ij.	Hydrochlorate of Am-	
		monia,	2 oz.
Sodæ Sulphatis,	℥viii.	Sulphate of Soda,	8 oz.
Pulv. Rad. Gentianæ,	℥iv.	Powdered Gentian,	4 oz.
„ Sem. Lini,	℥ij.	„ Linseed,	2 oz.
Aquæ Font., q. s. ut fiat	Spring Water, as much as		
electuar.	sufficient to make an		
	electuary.		

*M.* In cases of loss of appetite.—*Dose.* Two ounces at a time.

## 206.

℞

Antim. Pot. Tart.,	℥j.	Tartar Emetic,	1 oz.
Sodæ Sulphatis,	℥viii.	Sulphate of Soda,	8 oz.
Pulv. Rad. Glycyrrhizæ,	℥ivss.	Powdered Liquorice	
		Root,	4½ oz.
<i>M.</i> ut fiat electuarium.			

The fourth part to be given every two or three hours to horse or cattle in catarrhal or rheumatic diseases.

## 207.

$\mathcal{R}$	Ant. Sulph. Aur.,	3ij.	Gold. Sulphuret of Antimony,	2 dr.
	Hydrarg. Chloridi,	3j.	Calomel,	1 dr.
	Pulv. Fol. Hyoscyami,	} $\mathcal{M}$ } $\mathcal{M}$ } $\mathcal{M}$	Powd. Leaves of Henbane,	} 2 oz. of each
	„ Rad. Glycyrrhizæ,		„ Liq. Root,	
	„ Sem. Lini,		„ Linseed,	
		3j.		1 oz.

*M.* The fourth part every two hours. For horse or cattle affected with inflammation of the respiratory organs, with more or less painful cough.

## 208.

$\mathcal{R}$	Antim. Sulph. Aur.,	3j.	Golden Sulphuret of Antimony,	1 dr.
	Pulv. Rad. Glycyrrhizæ,	3j.	Powdered Liquorice Root,	1 oz.
	Mellis Crudi, q. s. ad electuarium molle.		Common Honey, as much as sufficient to make a soft electuary.	

*M.* Half a tea-spoonful to be given every three hours to dog with dry cough.

## 209.

$\mathcal{R}$	Sodæ Boratis Pulv.,	3j.	Powdered Borate of Soda,	1 oz.
	Pulv. Bacc. Juniperi,	3iv.	Powdered Juniper Berries,	4 oz.
	Farinæ Secalinæ,	3jss.	Rye Flour,	1½ oz.

*Aquæ Fontanæ*, q. s. ad electuar. A useful diuretic to accelerate the crisis in influenza, and advantageous in pleurisy, etc.

## 210.

℞

Antimonii Sulph.,	3ij.	Sulphuret of Anti- mony,	2 dr.
Pulv. Gentianæ,	3vi.	Gentian,	6 dr.
„ Quassie,	3vi.	Quassia,	6 dr.
Sacchari Fæcis,	3iv.	Treacle,	4 oz.
<i>M. Fiat electuarium.</i> To give in small but often repeated doses to pig in chronic catarrh, etc.			

## 211.

℞

Antimonii Sulph.,	3ij.	Sulphuret of Anti- mony,	2 dr.
Camphoræ,	ʒj.—ʒij.	Camphor,	1—2 scr.
Mellis,	3iv.	Honey,	4 oz.
<i>Misce fiat electuarium.</i> For pig as a febrifuge, or in cases of cough, etc.			

## 212.

℞

Potassæ Nitratis,	ʒjss.	Nitre,	1½ oz.
Sodæ Sulphatis,	ʒxvi.	Sulphate of Soda,	16 oz.
Pulv. Rad. Altheæ,	3ij.	Powdered Marshmallow Root,	2 oz.

*Misce cum Aqua fontana quantum satis ad electuarium.*  
The sixth or eighth part to be exhibited every hour, or every two hours, to horse or ox suffering from acute inflammatory disease.

## 213.

℞

Ant. Oxysulphureti,	ʒj.	Oxysulphuret of Anti- mony,	1 oz.
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Pulv. Opii,                   ℥ij. Powdered Opium,   2 dr.  
Mellis,                   ℥viii. Honey,           8 oz.

*M.* One or two ounces of this electuary every two or three hours in bronchitis in horse and ox.

## 214.

℞

Sodæ Sulphatis,   lb. j. Sulphate of Soda,   1 lb.  
Farinæ,           ℥ij. Flour,           3 oz.  
Pulv. Rad. Altheæ, ℥jss. Powdered Marshmallow  
  Root,           1½ oz.  
Aquæ Font.,       q. s. Spring Water, as much as  
  sufficient.

*M.* ut fiat electuarium. The fourth part to be given every two hours, in inflammatory diseases, etc.

## 215.

℞

Pulv. Opii,                   ℥ij. Powdered Opium,   2 dr.  
Pulv. Glycyrrhizæ,   ℥ij. Powdered Liquorice, 2 oz.  
Mellis,                   ℥viii. Honey,           8 oz.  
*M.* Electuary in sore throat in the horse.

## 216.

℞

Tinct. Myrrhæ,       ℥ij. Tinct. of Myrrh,   2 oz.  
Mist. Camph.,       ℥iv. Camphor Mixture,   4 oz.  
Mellis,               ℥vi. Honey,           6 oz.  
*M.* Fiat electuarium. For sore throat in horse or ox.

## 217.

℞

Pulv. Camphoræ,   ℥ijss. Camphor,           2½ dr.  
Pulv. Valerian.,   ℥ijss. Powdered Valerian, 3½ dr.  
Mellis,               ℥x. Honey,           10 oz.  
*M.* Camphor electuary for horse.



## 218.

℞

Acid. Tannici,	℥j.	Tannin,	1 dr.
Sp. Vini Gallici,	℥ij.	Brandy,	2 oz.
Mellis,	℥iv.	Honey,	4 oz.

*M.* Fiat electuarium. An electuary for sore throat in the horse.

## 219.

℞

Ferri Sulph.,	℥j.	Sulphate of Iron,	1 oz.
Pulv. Gentiani,	℥ij.	Powdered Gentian,	2 oz.
Mellis,	℥xvi.	Honey,	16 oz.

*M.* Tonic electuary for the horse. Two table-spoonfuls at a time.

## 220.

℞

Pulv. Cinchonæ,	℥ij.	Powdered Cinchona,	2 oz.
Mellis,	℥viii.	Honey,	8 oz.

*M.* Tonic electuary for horse. *Dose.* One or two ounces three or four times a day.

## 221.

℞

Confectio Sennæ, ℥ij.—℥viii.	Confection of Senna,	2—8 dr.
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A very useful purge for dogs, in doses according to the size of the animal.

## 222.

℞

Sulph. Sub.,	℥j.—℥ij.	Sublimed Sulphur,	1—2 dr.
Mel.,	℥ij.	Honey,	2 oz.

*M.* An aperient electuary for a dog.

## 223.

R

Plumbi Acetatis Cryst.,	3ij.	Acetate of Lead,	2 dr.
Fol. Digital. Purpur.		Powdered Leaves of	
Pulv.,	3ij.	Digitalis,	2 dr.
Rad. Glycyrrh. Pulv.,	3ij.	Powdered Liquorice	
		Root,	2 oz.
Rad. Althææ Pulv.,	3j.	Powdered Marshmal-	
		low Root,	1 oz.
M. c. Aqua Fontan. q.s. ut		Mix with sufficient Spring	
fiat electuarium.		Water to make an elec-	
		tuary.	

The fourth part to be administered to horse every three hours, in cases of carditis or pneumonia, associated with much fever.

## 224.

R

Pulv. Plumbi Acet.,	3iij.	Acetate of Lead,	3 dr.
Ext. Hyoscyam.,	3iij.	Extract of Henbane,	3 dr.
Pulv. Semin. Lini,	3iv.	Powdered Linseed,	4 oz.
Aqua Fontanæ, q.s. ut fiat		Spring Water, as much as	
electuar.		sufficient to make an	
		electuary.	

*Dose.* Two table-spoonfuls.

## 225.

R

Camphoræ,	3iij.	Camphor,	3 dr.
Pulv. Cort. Quercus,	} $\frac{ss}{iii}$	Powd. Oak Bark,	} $\frac{ss}{iii}$ of each
Pulv. Rad. Zing.,		Powd. Ginger,	
Farinæ Secalinæ,	3jss.	Rye Flour,	1½ oz.
Misce cum Aqua Fontanæ		Mix with sufficient Spring	
quantum satis ut fiat elec-		Water to make into	
tuar.		electuary.	

The sixth part every fourth hour, to horse or ox affected with diarrhœa, hæmaturia, chronic catarrhs, etc.

# VETERINARIAN'S VADE MECUM.

226.

℞  
 Ann. Tannin, 3j. Tannin, 1 oz.  
 Pulv. Rad. Gentiane, 3ij. Powd. Gentian Root, 3 oz.  
 Pulv. Scutell. q.s. ut fiat Rye Flour, as much as  
 cum Aquæ Fontan. q.s. sufficient, and a suitable  
 quantity of water to  
 form an electuary.  
 The fourth part to be given every second or fourth hour  
 in case of hæmaturia, diarrhoea, etc.

227.

℞  
 Ferri Sulphatis }  
 Camphoræ }  
 Pulv. Rad. Zing. }  
 Pulv. Sem. Limi. }  
 Aquæ Fontan. q.s. ad elec- }  
 tuarium. }  
 Sulphate of Iron, }  
 Camphor, }  
 Powdered Ginger, }  
 Powdered Linseed, }  
 Spring Water, as much as  
 sufficient to make an  
 electuary.  
 The fourth part to be exhibited every three hours, in  
 disease accompanied by low or asthenic fever, etc.

## PILLS.

228.

℞  
 Ext. Col. Co.,  
 Pulv. Colch.,  
 Pil. Hydrarg.,  
 M. Purgative for  
 creased for large dog.  
 Compound Extract of Co-  
 locynth, ½ scr.  
 gr. vi. Powdered Colchicum, 6 gr.  
 gr. v. Mercurial Pill, 5 gr.  
 Quantity may be in-

## 229.

℞

Pulv. Jalapæ, ℥j.—℥j. Powdered Jalap, 1 scr.—  
1 dr.

Hydrarg. Chlor., gr. ij.— Calomel, 2—3 gr.  
gr. iij.

Confectio Rosæ, q.s. Confection of Roses, as  
much as sufficient.

*M.* A purge for the dog.

## 230.

℞

Pilulæ Hydrargyri, gr. iij. Mercurial Pill, 3 gr.

Pulv. Scillæ, gr. ij. Powdered Squills, 2 gr.

Pulv. Digitalis, gr. j. Powdered Digitalis, 1 gr.

*M. fiat pilula.* One night and morning as an alterative  
and diuretic for dog.

## 231.

℞

Creosoti, m xx. Creosote, 20 drops.

Pulv. Glycyrrhizæ, ℥j. Powdered Liquorice, 1 dr.

Mucilaginis Acaciæ, q.s. ut Gum Mucilage, as much as  
fiant pilulæ xx. sufficient to make 20  
pills.

One given every two hours to dog affected with bron-  
chitis, vomiting, etc., etc.

## 232.

℞

Tinct. Aconiti (Flem.), Fleming's Tincture of Aco-  
nite, 2 drops.

Pot. Nitr., gr. iij.—gr. viii. Nitre, 3—8 gr.

Ext. Hyoscyami, gr. ij.— Extract of Hyoscyamus,  
gr. vi. 2—6 gr.

Confectio Rosæ, q.s. Confection of Roses, as much as sufficient.

*M.* Sedative and febrifuge pill for dog. Useful in pneumonia.

## 233.

R

Ext. Belladonnæ, gr. j.— Extract of Belladonna,  
gr. iv. 1—4 gr.

Pot. Nitr., gr. iij.—gr. viii. Nitre, 3—8 gr.

Pulv. Jacobi, gr. j.— James' Powder, 1—4 gr.  
gr. iv.

Confectio Rosæ, q.s. Confection of Roses, as much as sufficient.

*M.* Sedative and febrifuge pill for dog.—MAYHEW.

## 234.

R

Ext. Belladonnæ, gr. vi.— Extract of Belladonna,  
gr. xxiv. 6—24 gr.

Pot. Nitr., ʒj.—ʒiv. Nitre, 1—4 scr.

Ext. Gentianæ, ʒj.—ʒiv. Extract of Gentian, 1—  
4 dr.

Pulv. Quassia, q.s. Powdered Quassia, as much as sufficient.

*M.* Make into twenty-four pills. In early stages of distemper in dog.—MAYHEW.

## 235.

R

Petrolei Barbadosensis, ʒss. Barbadoes Tar, ½—2 dr.  
—ʒij.

Pulv. Scillæ, ʒj.—ʒiv. Powdered Squills, 1—4 dr.

Ext. Belladonnæ, ʒj.—ʒiv. Extract of Belladonna,  
1—4 scr.

Pulv. Liquiritiæ, q.s. Powdered Liquorice, as much as sufficient.

*M.* Make into twenty pills; give four daily. In inflammatory affections of respiratory organs.—MAYHEW.

## 236.

℞

Pulv. Jacobi, gr. j.—gr. iv. James' Powder, 1—4 gr.  
 Pulv. Doveri, gr. vi.—℥j. Dover's Powder, 6 gr.—  
 1 scr.

Balsami Peruviani, q.s. Peruvian Balsam, as much as sufficient.

*M.* Make into a pill, and give four such daily. In acute inflammatory diseases in dog.—MAYHEW.

## 237.

℞

Ext. Hyoscyami, gr. j.— Extract of Henbane, 1—  
 gr. iv. 4 gr.

Pulv. Ammoniaci, gr. iv.— Powdered Ammoniacum,  
 gr. xii. 4—12 gr.

Pulv. Cubeb., gr. iv.— Powdered Cubebs, 4—  
 gr. xii. 12 gr.

Tereb. Comm., q.s. Common Turpentine, as much as sufficient.

*M.* Pill to be given four times daily to dog affected with laryngitis.—MAYHEW.

## 238.

℞

Ext. Hyoscyami, gr. xvi. Extract of Henbane, 16 gr.

Sodæ Carb., ℥ss. Carbonate of Soda,  $\frac{1}{2}$  oz.

Ext. Gentianæ, ℥ss. Extract of Gentian, „

Ferri Carb., ℥ss. Carbonate of Iron, „

*M.* Make into eight, sixteen, or thirty pills, and give two daily. In chronic cases of stomach disorder.—MAYHEW.

## 239.

℞

Hydrargyri cum Cretæ,      Mercury with Chalk, 4 gr.  
gr. iv.

Pulv. Ipecacuanhæ Comp.,      Dover's Powder,      5 gr.  
gr. v.

Confectio Rosæ,      q.s.      Confection of Roses, as  
much as sufficient.

*M.* In diarrhœa and dysentery in the dog.

## 240.

℞

Cupri Sulphatis,      gr. iv.      Sulphate of Copper,      4 gr.

Ext. Opii,      gr. ij.      Extract of Opium,      2 gr.

Ext. Gentianæ,      gr. xvi.      Extract of Gentian, 16 gr.

Misce fiant pilulas vi.      Mix and make into 6 pills.

Useful in chronic diarrhœa in dogs.

## 241.

℞

Zinci Sulphatis,      gr. vi.      Sulphate of Zinc,      6 gr.

Ext. Gentianæ,      ʒjss.      Extract of Gentian, 1½ scr.

Misce, divide in pilulas vi.

As a mild tonic for a dog after distemper, etc.

## 241 a.

℞

Acidi Gallici,      gr. xii.      Gallic Acid,      12 gr.

Pulv. Opii,      gr. j.      Powdered Opium,      1 gr.

Confectio Rosæ,      q.s.      Confection of Roses, as  
much as sufficient.

*M.* Divide in pilulas ij.      *M.* Divide into two pills.

A valuable astringent in hæmorrhage from the lung and nose.

**242.**

℞	Cretæ Præp.,	gr. v.—3j.	Prepared Chalk,	5 gr.—
			1 scr.	
	Pulv. Zing.,	gr. iij.—gr. x.	Powdered Ginger,	3—
			10 gr.	
	Confectio Aromaticæ,	3ss.	Aromatic Confection,	½—
	—3j.		1 dr.	
	<i>M. Astringent pills for dog.</i>			

**243.**

<b>℞ Ferri Iodidi,</b>	<b>gr. x.—3j.</b>	<b>Iodide of Iron,</b>	<b>10 gr.—</b>
			<b>1 scr.</b>
<b>Pulv. Cort. Cinchonæ,</b>	<b>3j.—</b>	<b>Powdered Cinchona Bark,</b>	
<b>℥ss.</b>		<b>1 dr.—<math>\frac{1}{2}</math> oz.</b>	
<b>Ext. Gentianæ,</b>	<b>3j.—℥ss.</b>	<b>Extract of Gentian,</b>	<b>1 dr.—</b>
		<b><math>\frac{1}{2}</math> oz.</b>	

*M.* Make into forty-eight pills, and give two three times daily to dog in cases of dropsy.—MAYHEW.

**244.**

Pulv. Nucis Vomicae, gr. ½.	Powdered Vomic Nut, ½—
—gr. j.	1 gr.
Ferri Sulph., gr. j.—gr. iv.	Sulphate of Iron, 1—4 gr.
Ext. Gent., q.s.	Extract of Gentian, as much as sufficient.

*M.* Make into pill, and give one such every four hours to dog troubled with continued vomiting.—MAYHEW.



## 245.

℞

Pulv. Nucis Vomicae, gr. j. Powdered Vomic Nut, 1—  
—vi. 6 gr.

Ferri Sesquichloridi, gr. x. Sesquichloride of Iron, 10  
—3j. gr.—1 dr.

Confectio Rosæ, q.s. Confection of Roses, as  
much as sufficient.

*M.* For dog affected with chorea or paralysis from dis-  
temper.

## 246.

℞

Ferri Valerianatis, gr. xii. Valerianate of Iron, 12 gr.  
—9j. —1 scr.

Olei Sabinæ, min. iv. Oil of Savin, 4 drops.

Confectio Rosæ, q.s. Confection of Roses, as  
much as sufficient.

*M.* Make into six pills; one to be taken thrice daily.  
For dogs affected with chorea.

## 247.

℞

Strychniæ, gr. j. Strychnia, 1 gr.  
Confectio Rosæ, 3jss. Confection of Roses, 1½ dr.

*M.* Make into 16 pills; one to be given night and  
morning to dogs affected with chorea. After a few days  
that the strychnia is being used, give the 12th of a grain  
in the same way.

## 248.

℞

Argenti Nitr., gr. ij. Nitrate of Silver, 2 gr.  
Confectio Rosæ, 3jss. Confection of Roses, 1½ dr.

*M.* Make into 16 pills; one to be given night and morning  
to dogs affected with chorea.

## 249.

R

Ferri Iodidi, gr. j.—gr. iv. Iodide of Iron, 1—4 gr.  
 Pulv. Nucis Vomic., gr.  $\frac{1}{4}$  Powdered Vomic.  
     —gr. j. Nut,  $\frac{1}{4}$ —1 gr.  
 Salicin, gr. j.—gr. iv. Salicine, 1—4 gr.  
 Ext. Gentianæ, gr. iij.— Extract of Gentian, 3—  
     gr. xii. 12 gr.  
 Pulv. Quassia, q.s. Powdered Quassia, as much  
     as sufficient.

*M.* Make into pill. Three or four of such pills may be given daily to dog.

## 250.

R

Quinæ Disulph., ʒj.—ʒiv. Disulphate of Quina, 1—  
     4 scr.  
 Ferri Sulph., ʒj.—ʒiv. Sulphate of Iron, 1—4 scr.  
 Ext. Gentianæ, ʒij.—ʒss. Extract of Gentian, 2 dr.—  
      $\frac{1}{2}$  oz.  
 Pulv. Quassia, q.s. Powdered Quassia, as much  
     as sufficient.

*M.* Make into twenty pills, and give three daily as tonic to dog.—MAYHEW.

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 INHALATIONS.

## 251.

Bran, moistened with hot water, and introduced into a nose-bag, serves as a means to cause the inhalation of watery vapour. Vinegar, tincture of iodine, turpentine, may be inhaled. The fumes emanating from the ignited

H

leaves of stramonium or a puff-ball may be directed towards the nostrils of an animal; the first, in cases of asthma and broken wind; the second, like the vapour of ether and chloroform, to induce anesthesia.

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### ENEMATA.

## 252.

℞

Olei Lini,	Oj.	Linseed Oil,	1 pint.
Olei Terebinthinæ,	℥iv.	Oil of Turpentine,	4 oz.
Olei Crotonis,	℥ss.	Croton Oil,	$\frac{1}{2}$ dr.
Decocti Avenæ,	Oij.	Decoction of Oats,	2 pints.

*Misce.* A purgative enema, to be used when there is any obstacle to the usual methods of exhibiting medicine, and in peculiar cases of constipation, etc.

## 253.

℞

Tinct. Assafœtida,	℥ij.	Tincture of Assafœ- tida,	2 dr.
Ol. Lini,	℥ij.	Linseed Oil,	2 oz.
Decocti Avenæ,	℥vi.	Decoction of Oats,	6 oz.

*M.* In obstinate constipation in the dog, when purgatives cannot be conveniently administered, or when they are speedily rejected by the stomach.

## 254.

℞

Tinct. Opii,	℥j.	Tincture of Opium,	1 oz.
Decocti Amyli,	Oj.	Starch Emulsion,	1 pint.

*M.* A useful enema to check straining or tenesmus in horse and ox. The same substances in appropriate dose may serve in other animals.

## 255.

℞

Tinct. Opii,                      ℥j. Tincture of Opium, 1 scr.  
 Ether Sulph.,                      ℥iv. Sulphuric Ether, 4 dr.

*M.* Add to a quart of cold gruel, and use as enema for  
 dog.—MAYHEW.

## LINIMENTS. LOTIONS. INJECTIONS.

## 256.

℞

Unguenti Hydrargyri, ℥ij. Mercurial Ointment, 2 oz.  
 Camphoræ,                      ℥j. Camphor, 1 dr.  
 Liquoris Ammoniæ, ℥ij. Liquor Ammonia, 2 oz.  
 Olei Olivæ,                      ℥iv. Olive Oil, 4 oz.

*Misce.* In skin diseases.

## 257.

℞

Ol. Tereb.,	}	ā ā	℥iv.	Oil of Turpentine,	}	of each 4 oz.
Ol. Picis,				Oil of Tar,		
Ol. Lini,				Linseed Oil,		

*M.* Mange liniment.

## 258.

℞

Sulphuris,	}	ā ā ℥j.	Sulphur,	}	of each 1 pound.
Saponis Mollis,			Soft Soap,		
Aquæ Fervidæ,			Oij.		Boiling Water, 3 pints.

*Misce secundum artem.* Sulphur liniment, used in skin  
 diseases.

## 259.

R

Linimenti Saponis,	3ij.	Soap Liniment,	2 oz.
Linimenti Camphoræ		Compound Camphor	
Compositi,	3ij.	Liniment,	2 oz.
Tincturæ Opii,	3ss.	Tincture of Opium,	$\frac{1}{2}$ oz.

*M.* In sore throat and other inflammatory diseases.

## 260.

R

Tinct. Arnicæ Mont.,	3ij.	Tincture of Arnica,	2 dr.
Aquæ,	f3xii.	Water,	12 oz.

Misce fiat lotio. Much to be recommended as an application over inflammatory swellings, over the seat of strains, bruises, etc.

## 261.

R

Ol. Tereb.,	} a a 3j.	Oil of Turpentine,	} 1 oz. of each
Tinct. Opii,		Tinct. of Opium,	
Lin. Saponis,		Soap Liniment,	
Tinct. Capsici,	3j.	Tincture of Capsicum,	1 dr.

*M.* An embrocation for rheumatism.—MAYHEW.

## 262.

R

Iodinii,	3ss.	Iodine,	$\frac{1}{2}$ oz.
Glycerinæ,	3ij.	Glycerine,	2 oz.
Unguenti Hydrargyri,	3ij.	Mercurial Ointment,	2 oz.
Olei Olivæ,	3vi.	Olive Oil,	6 oz.

*Misce.* In chronic enlargements.

## 263.

R

Potassii Iodidi,	3ij.	Iodide of Potassium,	2 dr.
Aquæ,	3j.	Water,	1 oz.
Misce, et adde Glycerinii		Mix, and add Glycerine	
3ijss.		2½ oz.	

A useful liniment in glandular enlargements, etc.

## 264.

R

Ext. Opii,	3ij.	Extract of Opium,	2 dr.
Liq. Plumbi Diacet.,	3ij.	Gonlard's Extract,	2 oz.
Aq. Distil.,	3viii.	Distilled Water,	8 oz.

M. fiat lotio. To be used externally as a sedative.

## 265.

R

Hydrargyri Bichloridi,		Bichloride of Mercury,	
gr. ij.		2 gr.	
Acidi Hydrocyanici Diluti,		Dilute Prussic Acid,	2 dr.
3ij.			
Misturæ Amygdalæ,	3vi.	Almond Mixture,	6 oz.

Misce fiat lotio. To check the itching in prurigo and other diseases of the skin, especially in the dog.

## 266

R

Liquoris Potassæ,	3ss.	Solution of Potash,	½ oz.
Acidi Hydrocyanici Diluti,		Dilute Hydrocyanic Acid,	
3ij.		2 dr.	
Aquæ,	3viiss.	Water,	7½ oz.

Misce. An alkaline and sedative lotion. Useful in red mange in the dog, and other skin diseases.



## 272.

Argenti Nitratis, gr. xx. Nitrate of Silver, 20 gr.  
 Sp. Vini Camphorati, fʒij. Camphorated Spirit, 2 oz.  
 Aquæ Distil., fʒviii. Distilled Water, 8 oz.

*Misce.* To apply on indolent sores or ulcerated opening of an abscess.

## 273.

℞

Olei Lini, } ā ā ʒvi. Linseed Oil, } of each  
 Liquoris Calcis, } Lime Water, } 6 oz.

*Misce* fiat lotio. Carron oil. For irritable ulcers, burns, etc.

## 274.

℞

Tincturæ Myrrhæ, ʒiv. Tincture of Myrrh, 4 dr.  
 Aluminis, ʒij. Alum, 2 dr.  
 Aquæ, ʒvijss. Water, 7½ oz.

*M. fiat lotio.* A lotion or gargle for sore mouth and sore throat.

## 275.

℞

Zinci Chloridi, gr. j. Chloride of Zinc, 1 gr.  
 Aquæ, ʒj. Water, 1 oz.

*M.* A lotion for suppuration from prepuce in dog.

## 276.

℞

Zinci Sulphatis, ʒij. Sulphate of Zinc, 2 dr.  
 Aquæ Cal., Oiv. Tepid Water, 4 pints.

*M.* To use as an injection for the nose in simple catarrh.



## 277.

℞

Aluminis,	gr. xv.—xx.	Alum,	15—20 gr.
Aquæ,	f℥j.	Water,	1 oz.

*M.* An astringent injection in epistaxis.

## 278.

℞

Pulv. Sabinæ,	℥ijss.	Powdered Savin,	2½ oz.
Creosoti,	℥ss.	Creosote,	½ oz.
Aquæ Ferv.,	Oij.	Boiling Water,	2 pints.

Misce fiat misturam secundum artem. An injection in leucorrhœa.—REHRS.

## 279.

℞

Amm. Hydrochlor,	℥j.	Sal Ammoniac,	1 oz.
Pot. Nitr.,	℥ij.	Nitre,	2 oz.
Aquæ,	f℥xvi.	Water,	16 oz.

*M.* fiat lotio. To be used as soon as made. A refrigerating lotion.

## 280.

℞

Sodii Chloridi,	Chloride of Sodium,
Potassæ Nitratis,	Nitre,
Ammoniæ Hydrochloratis,	Hydrochlorate of Am-
partes equales.	monia, equal parts.
Aquæ, quantum satis sit	Water, as much as suffi-
ad solvendas.	cient to dissolve the
	above.

Useful when ice cannot be procured.

## COLLYRIA.

281.

℞

Argenti Nitr.,	gr. viii.	Nitrate of Silver,	8 gr.
Aquæ Distil.,	f℥iv.	Distilled Water,	4 oz.

*M. Fiat collyrium.*

282.

℞

Zinci Sulph.,	℥ss.	Sulphate of Zinc,	$\frac{1}{2}$ dr.
Plumbi Diacet.,	℥j.	Diacetate of Lead,	1 dr.
Aquæ Pur.,	f℥xvi.	Water,	16 oz.

*M. Fiat collyrium.*

283.

℞

Hydrarg. Bichlor.,	gr. iv.	Corrosive Sublimate,	4 gr.
Sp. Vini Rect.,	gtt. xxx.	Rectified Spirit of Wine,	30 drops.
Aquæ Distil.,	f℥iv.	Distilled Water,	4 oz.

*M. Fiat collyrium.*

284.

℞

Zinci Sulph.,	gr. ij.—iv.	Sulphate of Zinc,	2—4 gr.
Vel Aluminis,	gr. ij.—vi.	Or Alum,	2—6 gr.
Vel Cupri Sulphatis,	gr. ss.	Or Sulphate of Copper,	$\frac{1}{2}$ —
—iv.			4 gr.
Vel Argenti Nitr.,	gr. j.—	Or Nitrate of Silver,	1—
iv.			4 gr.
Vel Liq. Plumbi Diacet.,		Or Solution of Diacetate of	
m. x.		Lead,	10 drops.
Aquæ Distillatæ,	℥j.	Distilled Water,	1 oz.

*M. Simple collyria.*



Tinct. Croci,                    ʒss. Tincture of Saffron,  $\frac{1}{2}$  oz.  
 Sp. Vini Rect.,                ʒiijss. Rectified Spirit of Wine,  
    3 $\frac{1}{2}$  oz.

*M. Fiat collyrium. In phlegmonous ophthalmia.*

290.

℞

Atropia,                    gr. j. Atropine,                    1 gr.  
 Acid Nitrici Dil.,        gutt. ij. Dilute Nitric Acid, 2 drops.  
 Sp. Vini Rect.,        gutt. iij. Rectified Spirit of Wine, 3  
    drops.

Aquæ Distil.,                fʒij. Distilled Water,        2 dr.

*M. A useful collyrium to induce dilatation of the iris,  
 and especially in hernia iridis.*

291.

℞

Tinct. Opii,                    ʒij. Tincture of Opium,        2 dr.  
 Ext. Belladonnæ,        ʒj. Extract of Belladonna,  
    1 dr.

Aquæ Distil.,                Oj. Distilled Water,        1 pint.

*M. Fiat collyrium.*

## BLISTERS.

292.

℞

Pulv. Canth.,                    ʒij. Powd. Cantharides,        2 dr.  
 Olei Terebinthinæ,        ʒij. Oil of Turpentine,        2 dr.  
 Pulv. Euphorbii,                ʒj. Powdered Euphorbium, 1  
    dr.

Olei Origani, ʒj. Oil of Origanum, 1 dr.  
 Adeps Præp., ʒij. Prepared Lard, 2 oz.  
 Misce secundum artem. A very active blister, to be  
 used with caution.

293.

℞  
 Antim. Pot. Tart., ʒj. Tartar Emetic, 1 dr.  
 Unguenti Cantharid., ʒij. Cantharides Ointment, 2 oz.  
 Misce fiat unguentum. A powerful blister for horse  
 or ox.

294.

℞  
 Tinct. Croton Tereb., ʒij. Terebinthinate Solution of  
 Croton, 2 dr.  
 Aq. Amm. Fort., ʒss. Solution of Ammonia,  $\frac{1}{2}$  oz.  
 Ol. Olivæ, ʒiv. Olive Oil, 4 oz.  
 M. An active blister for the ox.

295.

℞  
 Pulv. Croton, ʒss. Powdered Croton Seeds,  
 $\frac{1}{2}$  oz.  
 Pulv. Cantharides, ʒj. Powdered Cantharides,  
 1 oz.  
 Ol. Terebin., Oj. Oil of Turpentine, 1 pint.  
 Ol. Olivæ, Oj. Olive Oil, 1 pint.  
 M. A blister for the ox.

296.

℞  
 Liq. Amm., }  
 Sp. Vini Camph., } ʒj. Solution of Ammonia, }  
 Camphorated Spirit, } 1 oz. of each  
 M. Blister for dog in distemper fits. Applied with a  
 piece of spongio-piline for from 5 to 15 minutes.—  
 MAYHEW.

## OINTMENTS.

297.

℞

Picis Liquidæ,	℥j.	Tar,	1 oz.
Sulphuris,	℥ss.	Sulphur,	$\frac{1}{2}$ oz.
Adipis Præp.,	℥jss.	Prepared Lard,	$1\frac{1}{2}$ oz.
Misce fiat unguentum. Useful in skin diseases.			

298.

℞

Sulphuris,	℥jss.	Sulphur,	$1\frac{1}{2}$ oz.
Ol. Juniperi,	℥ss.	Oil of Juniper,	$\frac{1}{2}$ oz.
Ung. Resinæ,	℥ij.	Resin Ointment,	3 oz.

*M.* An ointment for mange in the dog. Applied with friction one day, and washed off next. This is to be repeated as often as necessary.

299.

℞

Unguenti Conii,	} aa ℥ss.	Hemlock Ointment,	} $\frac{1}{2}$ of each
Unguenti Opii,		Opium Ointment,	

*Misce.* A sedative ointment.

300.

℞

Extracti Belladonnæ,	℥ij.	Extract of Belladonna,	3 dr.
Camphoræ,	℥ij.	Camphor,	2 dr.
Spiritus Rectificati,	q.s.	Rectified Spirit, as much	
as sufficient.			
Extracti Conii,	℥ss.	Extract of Hemlock,	$\frac{1}{2}$ oz.
Adipis Recentis,	℥vij.	Lard,	7 oz.

*Misce.* A useful ointment in cases of mammitis, or painful affections of joints.

## 301.

R

Camphoræ, ʒij. Camphor, 2 dr.  
 Ung. Hydrargyri Fort., ʒj. Strong Mercurial Ointment,  
 1 dr.

Ung. Sambuci, ʒj. Elder Ointment, 1 oz.

M. An ointment to be smeared around and on the  
 inside of the anus of dog with piles or tenesmus.—  
 MAYHEW.

## 302.

R

Hellebori Nigris vel Albis, Black or White Hellebore,  
 ʒj. 1 dr.

Adipis Præp., ʒj. Prepared Lard, 1 oz.

Misce fiat unguentum. Recommended as an irritant  
 for dressing setons.

## 303.

R

Pulv. Aluminis, }  
 Ol. Terebinthinæ, } aa ʒij. Powdered Alum, } 2 of each  
 Oil of Turpentine, } dr.

Adipis Præp., ʒvi. Prepared Lard, 6 dr.

Misce secundum artem. Recommended in grease.

## 304.

R

Cupri Diacetatis, ʒj. Verdigris, 1 dr.

Terebinthinæ, ʒj. Common Turpentine, 1 dr.

Adipis Præp., ʒjss. Prepared Lard, 1½ oz.

Misce secundum artem. Used as an application to  
 foul ulcers.

## 305.

℞

Calcis Chlorinatæ, 3j.—3ij. Chlorinated Lime, 1—2 dr.

Adipis Præp., 3j. Hog's Lard, 1 oz.

*Misce.* Useful in grease, and over all surfaces whence ooze fetid discharges.

## 306.

℞

Zinci Carbonatis, 3j. Carbonate of Zinc, 1 dr.

Adipis Præp., 3vij. Prepared Lard, 7 dr.

*Misce.* Useful for slight wounds, etc.

## 307.

℞

Iodinii, 3ss. Iodine,  $\frac{1}{2}$  dr.

Pot. Iodidi 3j. Iodide of Potassium, 1 dr.

Sp. Vini Rect., f3j. Rectified Spirits of Wine,  
1 dr.

Adipis Præp., 3ij. Prepared Lard, 2 oz.

*Misce fiat unguentum secundum artem.* Useful when rubbed over enlarged glands, such as in cases of bronchocele.

## 308.

℞

Potassii Bromidi, 3ij. Bromide of Potassium, 2 dr.

Adipis Præp., 3j. Prepared Lard, 1 oz.

*Misce.* Useful to rub over farcy buds.

## 309.

℞

Petrolei Barbadosensis,	} $\frac{ss}{vi}$	Barbadoes Tar,	} of each
Picis Burgundicæ,		Burgundy Pitch,	
Sevum,		Mutton Suet,	

*Misce fiat unguentum secundum artem.* An excellent hoof ointment.



## BATHS.

310.

*Temperature of Simple Baths.*

BATH.		VAPOUR.	
		Not Breathed.	Breathed.
Tepid Bath,	85° to 92°	96° to 106°	90° to 100°
Warm Bath,	92° to 98°	106° to 120°	100° to 110°
Hot Bath,	98° to 106°	120° to 160°	110° to 130°

Simple baths are most used in dog practice. Vapour baths have very justly had strong advocates amongst those who have treated the diseases of the horse. The above scale of temperatures is that used for man, and is adhered to for animals.

311.

℞

Sodæ Carbonatis, ℥ij. Carbonate of Soda, 2 pounds.

Aquæ Ferventis, cong. xxx. Boiling Water, 30 gallons.

Misce. To cleanse the skin, or useful in cases of rheumatism, etc.

312.

℞

Potassii Sulphureti, ℥iv. Sulphuret of Potassium, 4 oz.

Aquæ Fontis, cong. xxx. Water, 30 gallons.

Misce. Useful in scabies, paralysis from lead, etc.

## 313.

R

Creosoti,                    ℥ij. Creosote,                    2 oz.  
 Glycerinæ,                ℥ij. Glycerine,                2 oz.  
 Aquæ Ferventis, cong. xxx. Boiling Water, 30 gallons.  
*Misce.* In diseases of skin, attended with much irritation.

## 314.

R

Acid. Arseniosi,        lbij. Arsenious Acid, 2 pounds.  
 Potassæ Carbonatis, lbij. Carbonate of Potash, 2  
    pounds.  
 Aquæ Ferventis, cong. lx. Boiling Water, 60 gallons.  
*Misce.* Boil for half an hour. A dipping mixture as a  
 preventative against scab in sheep.

## 315.

R

Acid. Arseniosi,        lbij. Powdered Arsenious Acid,  
    2 pounds.  
 Ferri Sulphatis,        lbcc. Sulph. of Iron, 200 pounds.  
 Aquæ,                    cong. lx. Water,                    60 gallons.  
*M.* Boil until the fluid is reduced to a third, and then  
 add as much water as has been lost by evaporation. A  
 dipping mixture, as a preventative and cure for scab in  
 sheep. It is the Bain de Tessier so much thought of in  
 France.

## 316.

Acid. Arseniosi,        lbij. Arsenious Acid, 2 pounds.  
 Zinci Sulphatis,        lbx. Sulphate of Zinc, 10  
    pounds.  
 Aquæ,                    cong. lx. Water,                    60 gallons.  
*Misce.* Prepare as the foregoing one. It is used for the  
 same purpose, and is to be preferred to it, according to  
 some, inasmuch as it does not stain the wool.—CLEMENT.

## 317.

R

Acidi Arseniosi Pulv., ℔iv.	Powdered Arsenious Acid, 4 pounds.
Ferri Sulphatis Pulv., ℔xl.	Powdered Sulphate of Iron, 40 pounds.
Ferri Oxidi Nigri, ℔jss.	Powdered Black Oxide of Iron, 1½ pounds.
Pulv. Rad. Gentianæ, ℥xii.	Powdered Gentian Root, 12 oz.

*M.* To be well rubbed down and preserved in a well closed jar. When used, it is mixed with ten times its weight of water, and boiled for ten minutes. As a preventative against scab in sheep.

The amount here mentioned is enough to dip 200 sheep.

## ASTRINGENT APPLICATIONS. CAUSTICS.

## 318.

R

Pulv. Aluminis,	℥vi.	Powdered Alum,	6 oz.
Cupri Sulph.,	℥ij.	Sulphate of Copper,	2 dr.
Oxymel,	℔ss.	Oxymel,	½ pound.

*M.* A detergent dressing for aphthæ or thrush.

## 319.

R

Ol. Tereb.,	℥ij.	Oil of Turpentine,	2 oz.
Acid. Sulph.,	℥ij.	Sulphuric Acid,	2 dr.

*M.* Applied to diseased parts in foot-rot in sheep.—Hogg.

## 320.

℞

Ol. Tereb.,	℥ij.	Oil of Turpentine,	2 oz.
Acidi Sulphurici,	℥ss.	Sulphuric Acid,	$\frac{1}{2}$ oz.
Ol. Olivæ,	℥j.	Olive Oil,	1 oz.

*M.* To be applied to diseased parts in foot-rot in sheep.

## 321.

℞

Picis Liq.,	℥iv.	Tar,	4 oz.
Acid. Nitrici,	q.s.	Nitric Acid, as much as	sufficient.

*M.* Pour the nitric acid on the tar, rapidly stirring the mixture until active effervescence ensues. An excellent preparation for canker of the feet of horses.

## 322.

℞

Petroleum Barbadosensis,	℔bj.	Barbadoes Tar,	1 pound.
Adipis Fusi,	℥ij.	Melted Lard,	2 oz.
Acidi Sulphurici,	℥j.	Sulphuric Acid,	1 oz.

*M.* A caustic application to indolent ulcers and canker of the foot of the horse, etc.

## 323.

℞

Hydrargyri,	℥j.	Mercury,	1 oz.
Acidi Nitrici (sp. gr. 1040),		Nitric Acid,	2 oz.
℥ij.			

*Solve.* The acid nitrate of mercury. A caustic paste.

## 324.

℞

Hydrargyri Nitrici	} ā ā ℥j.	Nitric Oxide of	} of each
Oxydi,		Mercury,	
Aluminis,		Alum,	
1 dr.			

*Misce ut fiat pulvis.* Sprinkled over exuberant and spongy granulations.

## 325.

℞

Pot. Nitr.	℥ij.	Nitrate of Potash,	2 oz.
Ol. Tereb.	℥ij.	Oil of Turpentine,	2 oz.
Acid, Sulph.	℥ij.	Sulphuric Acid,	2 oz.
Aceti,	Oj.	Vinegar,	1 pint.

*M.* This preparation has been extolled as an application to sprains and wounds, etc. By adding to the above as much sulphate of copper as it will saturate, an excellent application for grease is formed.

## 326.

℞

Hydrarg. Bichlor.,	℥ss.	Corrosive Sublimate,	$\frac{1}{2}$ oz.
Acid. Hydrochlor.,		Hydrochloric Acid,	
min. x.		10 drops.	
Spir. Vini Rect.,	℥iv.	Rectified Spirits of Wine,	4 oz.

*M.* A caustic application for canker of the feet of horses, quittor, fistulæ of the withers, or poll-evil.

## 327.

℞

Hydrargyri Chloridi,	℥v.	Chloride of Mercury,	5 dr.
Hydrargyri Bisulphureti,		Bisulphuret of Mercury,	
gr. x.		10 gr.	
Acidi Arseniosi,	gr. xv.	Arsenic,	15 gr.
<i>Misce.</i> A compound arsenical caustic.			

## 328.

℞

Potassæ Hydratis,	} ā ā ℥j.	Hydrated Potash	} of each
Calcis,		Lime,	
Tere simul. The Vienna caustic.			

## III. MEMORANDA TOXICOLOGICA.

THE science of Toxicology relates to the history, properties, and effects of poisons.

A poison may be defined, a thing which, if retained within a living organism, induces disorder or death, 'without acting mechanically on the system.'

The clause, '*without acting mechanically on the system*,' is Mr Taylor's, and it is indispensable; because some agents are not poisons, strictly speaking, yet they destroy life, by acting mechanically on the system. Sponge swells in the stomach, and kills on being retained there; it acts as a mechanical obstacle, and nothing else. Pounded-glass is liable to inflict injury upon the alimentary canal, just in proportion to the size and sharpness of the fragments; and whenever it is swallowed in a state of coarse powder, it may irritate and excite inflammation of the stomach and bowels. Glass, in very fine powder, is decidedly alkaline, but it does not possess any of the properties of an alkaline poison;—on the contrary, in that condition in which its alkalinity is most manifested, it appears to be inert. It is said that six or seven ounces of this substance have been given to a dog, without producing any inconvenience to the animal.—(TAYLOR, 15.) Sponge, pounded-glass, iron-filings, and such like, are looked upon as *destructive things*, but not as *poisons*.

It has been said that a poison is 'a substance which, when administered in small quantity, is capable of acting deleteriously on the body.' Mr Taylor<sup>1</sup> remarks, that chloride of sodium ought to be excluded altogether from the class of poisons, if only those agents which act dele-

<sup>1</sup> Taylor on Poisons.

teriously in small doses are to be regarded as poisons. Common salt is an irritant poison in large doses ; and it has often proved destructive amongst pigs. The definition I have given seems to me better than others which have been suggested ; but it must not be forgotten, that no definition can absolutely serve the purposes of physical science.

The expression, *noxious thing*, by the side of the word *poison*, is adopted in indictments, leaving for the jury to decide, from evidence brought before them, whether a particular substance be or be not a poison. Mr Taylor condemns the form of expression, '*deadly poison*,' as calculated to give rise to legal objections.

Poisons may be either solid, liquid, or gaseous. They may be introduced into the system in various ways. They are for the most part rapidly absorbed by mucous surfaces, that of the alimentary canal being of course the most frequently concerned. In the case of death or disorder from chloroform, carbonic acid, or any other noxious gas, the respiratory mucous membrane is the absorbing agent. The skin has, in the natural state, very little power of absorption ; but if the epithelium be abraded, it acts like a mucous surface in that respect, and the same is true of the surfaces of all recent wounds and granulating sores. Horses have been destroyed in attempts made to eradicate warts by arsenic, or when canker of the foot (*paronychia equi*) has been injudiciously treated by the free application of corrosive sublimate to the sore surface.

Poisons may also be introduced directly into the circulation by injection into a vein ; and again they may be introduced amongst the tissues independently of the circulation, as by the bite of venomous reptiles.

The action of a poison is twofold—*local* and *remote*.

Poisons operate locally in three ways :—1. By chemically destroying the part with which they come in contact ; 2. By paralyzing the sentient extremities of the nerves ;

3. By simply irritating the part, and giving rise to inflammation and its consequences.' An agent may locally induce decomposition and dissolution; but 'the local action of a poison is not always indicated by physical changes in a part.' This is admirably illustrated by certain forms of lead poisoning in cattle. Lead poisoning in the vicinity of smelting-works, and due to dispersion through the air and deposit in pastures of lead in a minutely subdivided state, is attended with all the symptoms well known to occur when lead is absorbed or circulates through the blood. But in the vicinity of large towns, where the scavenger's collection is used as manure, and is known to contain the refuse matter out of painters' shops, such as the cleanings of paint-pots, soiled brushes, etc., lead finds its way on the pastures in a very different form to the above mentioned; and the ox that is grazing is liable to swallow portions of dried up paint or oil-cloth covered with preparations of lead, which are in a very insoluble condition. The effect of this is, that the lead paralyses the extremities of the motor nerves of the stomach; the animal's appetite continues for some time unimpaired, and large quantities of food are taken in, thus leading to irremediable impaction, in obedience to a physiological law, that distension of hollow viscera paralyses the latter, and they can in no way unload themselves; secondary symptoms supervene such as follow impaction of the stomach in animals under other circumstances, viz., those of sympathetic derangement of the nervous system, indicated by convulsions, delirium, etc. Local irritation is well illustrated by the action of the poison of venomous reptiles.

The remote action of a poison is exemplified by narcotics, which, wherever applied, affect the brain; by a blister of cantharides applied to the skin, inducing inflammation of the kidneys; and by the influence of digitalis over the



heart. The remote effects are usually due to the absorption or direct introduction of the noxious agent into the blood. The rapidity of the circulation, so beautifully demonstrated by Hering's experiment with ferrocyanide of potassium, and by the fact that white fumes pass out at the mouth almost instantaneously on the introduction of phosphuretted oil into the jugular vein of a dog, explains the quick action of most poisons. Some agents, however, such as hydrocyanic acid, nicotine, etc., may possibly destroy life by acting through the nerves. A sudden shock thus instantaneously communicated through the system is sufficient to annihilate life. Poisons are then said to act by sympathy; but I think the views entertained regarding sympathetic derangement admit of considerable modification. To avoid any very exclusive explanation as to the action of a poison, it is said that some substances act both by absorption and sympathy.

Whether a poison acts locally, or by being absorbed, or by sympathy, it affects the vitality of the solids and fluids of the body. Vitality of tissue, or of the blood, may be suddenly and irremediably impaired, or there may be partial annihilation of properties which living matter possesses to fit it for the performance of functions which are essential to life. We can only study the action of a poison as to effects on the tissues and on the blood; the *modus operandi*, as Mr Taylor very justly remarks, is a perfect mystery.

Habit, idiosyncrasy, and age, influence the effects of poisons in marked and peculiar ways.

Animals of different species are affected in a very different way by the same poison. Potassio-tartrate of antimony affords a good illustration of this; it is an active emetic and energetic poison in small doses, if given to omnivorous and carnivorous animals, whereas enormous quantities are sustained by the horse and ox without evidence

of discomfort or disorder. Vegetable poisons are said to be less noxious to vegetable feeders than to carnivora; but there are so many exceptions to this, that it cannot be said to constitute a rule. Jalap, cantharides, calomel, and aloes, afford useful examples of the action of agents which may be exhibited to animals of different kinds, in poisonous or medicinal doses, with very contradictory results.

The subjoined are the tables of the more important poisons, as given in Mr Taylor's work. Many poisons are mentioned which we shall not consider in the following pages. The tables are sufficiently complete for practical purposes, and it has been thought needless to withdraw from them certain of the agents which are known as poisons to man, as it could offer no advantage, though our experience of them, so far as regards the lower animals, is, to say the most, very limited.

Poisons are divided into three classes :—

IRRITANTS. NARCOTICS. NARCOTICO-  
IRRITANTS.

IRRITANT poisons may be divided into

MINERAL. VEGETABLE. ANIMAL.

And MINERAL IRRITANT POISONS may be sub-  
divided into

NON-METALLIC and METALLIC.

## CLASS I.

## IRRITANT POISONS.

## 1. NON-METALLIC IRRITANTS.

*Acids.*—Sulphuric Acid—Aromatic Sulphuric Acid—Sulphate of Indigo—Nitric Acid—Muriatic Acid—Phosphoric Acid—Nitro-Muriatic Acid—Nitro-Sulphuric Acid—Oxalic Acid—Tartaric Acid—Citric Acid—Acetic Acid—Vinegar.

*Alkalies.*—Potash and its carbonates—Soda and its carbonates—Ammonia and its carbonates—Baryta—Strontia—Lime.

*Alkaline Salts.*—Binoxalate of Potash—Bitartrate of Potash—Bromide of Potassium—Iodide of Potassium—Sulphurets of Potassium and Sodium—Persulphuret of Calcium—Alkaline Hypochlorites (chlorites of potash, soda, and lime)—Muriate of Ammonia—Nitrate of Potash—Sulphate of Potash—Sulphate of Alumina and Potash (alum)—Chloride of Sodium (common salt).

*Metalloidal Poisons.*—Phosphorus—Chlorine—Bromine—Iodine—Sulphur.

## 2. METALLIC IRRITANTS.

**ARSENIC.**—Arsenious Acid—Arsenite of Potash (Fowler's solution)—Metallic Arsenic—Fly Powder—Fly Water—Arsenic Acid—Arsenates—Sulphurets of Arsenic (orpiment, realgar). **MERCURY.**—Corrosive Sublimate—Calomel—Ammonio-Chloride of Mercury (white precipitate)—Black Oxide of Mercury—Mercurial Ointment—Mercury with Chalk (grey powder)—Red Oxide of Mercury

—Red Precipitate—Iodide of Mercury—Cinnabar—Vermilion—Bicyanide of Mercury—Turbitb Mineral—Nitrates of Mercury—Acetate of Mercury. **LEAD.**—Acetate (sugar of lead)—Goulard's Extract—Nitrate of Lead—Chloride of Lead—Oxychloride (Turner's yellow)—Carbonate of Lead (white lead)—Sulphate—Chromate—Iodide—Oxides. **COPPER.**—Alloys of Copper—Sulphate (blue vitriol)—Subacetate (verdigris)—Oxychloride—Phosphate—Sulphuret—Ammonio-Sulphate—Nitrate—Carbonate—Oxides. **ZINC.**—Sulphate (white vitriol)—Acetate—Carbonate (calamine). **TIN.**—Chlorides—Dyer's Spirit. **SILVER.**—Nitrate (lunar caustic). **GOLD.**—Terchloride. **IRON.**—Sulphate (copperas or green vitriol)—Muriate. **BISMUTH.**—Subnitrate. **CHROME.**—Bichromate of Potash.

### 3. VEGETABLE IRRITANTS.

Aloes—Anemone—Arum—Bryony—Castor Oil Seeds—Cayenne Pepper—Celandine—Colocynth—Creosote—Croton Seeds and Oil—Daffodil—Elaterium—Elder—Euphorbium—Gamboge—Hyssop—Jatropha (Curcas)—Jalap—Manchineel—Mezereon—Mustard—Ranunculus—Savin—Scammony—Stavesacre—Calthapalustris—Clematis Vitalba—Cochlearia Armoracia—Cyclamen Europæum—Fritillaria Imperialis—Lobelia Syphilitica—Plumbago Europæa—Rhus Toxicodendron—Rhus Radicans—Rhododendron Chrysanthum—Sedum Acre—Oil of Tar—Oil of Turpentine—Pyroxylic Spirit—Dippel's Oil—Fusel Oil—Decayed Vegetable Matter—Decayed Carrots—Potatoes—Mould—Mouldy Bread—Flour—Ergot of Rye.

### 4. ANIMAL IRRITANTS AND ANIMAL POISONS.

Cantharides. Poisonous Food. Fish Poison—The Muscle—Whelk—Oyster—Periwinkle—Lobster—Crab—

Pickled Salmon—Herring—Halibut—Mackerel—Tunny. Cheese—Sausages—Train Oil. Flesh of animals poisoned from disease or decay—Bacon—Diseased and putrefied animal matter—Virus of Glanders—Poison of the dead body—Poison of Rabies (hydrophobia). Poison of Venomous Serpents—The Viper—Rattlesnake—Cobra de Capello. Venomous Insects—Scorpion—Scolopendra—Spider—Tarantula—Argos Persicus—Bee—Wasp—Hornet.

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## CLASS II.

### NARCOTIC POISONS.

Opium—Morphia and its salts—Hydrocyanic Acid—Bitter Almond—Cherry Laurel—Jatropha Manihot—Cyanide of Potassium—Hyoscyamus—Lactuca—Solanum—Camphor—Alcohol—Ether.

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## CLASS III.

### NARCOTICO-IRRITANT POISONS.

Carbazotic Acid—Cevadilla—Cocculus Indicus—Coriaria Myrtifolia—Darnel Grass—Foxglove—Hellebore—Hemlock—Ipecacuanha—Laburnum—Lobelia Inflata—Meadow Saffron—Monkshood—Mushrooms—Nightshade—Nux Vomica (strychnia)—Rue—Squill—Thornapple—Ticunas—Tobacco—Upas—Woorara—Yew.

## POISONOUS GASES.

Ammonia—Carbonic Acid—Carbonic Oxides—Carburetted Hydrogen (coal gas)—Chlorine—Cyanogen—Hydrogen—Muriatic Acid—Nitrogen—Protoxide of Nitrogen—Deutoxide of Nitrogen—Sulphuretted Hydrogen—Sulphurous Acid.

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## IRRITANT POISONS.

## NON-METALLIC IRRITANTS.

*Mineral Acids.*

**SULPHURIC ACID.** *Symptoms.*—White or black excoriations of buccal membrane, with intense pain, intolerable thirst, difficulty in swallowing, and painful efforts to cough. Carnivorous animals suffer from constant vomiting of black matter, often tinged by blood; and which matter effervesces, if mixed with carbonate of lime. With a quick and feeble pulse, cold skin, and accelerated breathing, there is great bodily weakness; sometimes convulsive movements of the muscles; the animal gives indication of pain in the belly and chest, clammy sweat bedews the body, and death soon supervenes.

*Post-Mortem Appearances.*—Redness and erosions of the mucous membrane of the mouth, fauces and œsophagus. The membrane may be tumefied and corrugated; and this condition is observed also in the stomach, where the contents are of a dark-brown or black colour. The mucous lining of the stomach shows signs of inflammation, or the coats of the viscus may be perforated, being softened, and the lips

of the opening black and irregular. If the contents have escaped through this opening, the surrounding viscera are found acted upon by the acid. The stomach is occasionally empty, and firmly contracted. The small intestines are more or less inflamed, and their contents like those of the stomach.

*Treatment.*—Avoid water, which, by mixing with the sulphuric acid in the stomach, gives rise to an amount of heat productive of the worst effects. Give calcined magnesia with milk, or other mucilaginous fluid. Chalk, soap and water, and oil, may be found useful as substitutes.

*Tests.*—If concentrated, sulphuric acid chars wood or other organic matter; if boiled with copper cuttings, mercury, or wood, sulphurous acid is evolved; lastly, heat is given out if water be poured on the acid. If diluted, add a few drops of nitric acid to the acid fluid to be tested, and then mix with it a solution of nitrate of barytes or acetate of lead; a dense insoluble white precipitate of sulphate is deposited.

#### NITRIC ACID. (Aqua Fortis. Red Spirit of Nitre.)

*Symptoms.*—With most of the symptoms indicative of poisoning by sulphuric acid, we have the tongue swollen, and of a lemon-yellow colour. There is often gaseous eructation. The suffering is intense, and increased at every effort to swallow.

*Post-Mortem Appearances.*—The mucous membrane of the mouth presents various hues, from orange-yellow to brown. The pharynx, larynx, and œsophagus are inflamed, and the mucous coat readily detached. The stomach, if not perforated, is distended with gas; its mucous lining is inflamed, and presents yellow, brown, or black patches. Sometimes there is indication of peritonitis, with effusion of lymph gluing the abdominal viscera together. The lungs are congested.

*Treatment.*—As in poisoning by sulphuric acid. A solution of carbonate of soda may be exhibited in barley water or linseed tea.

*Tests.*—Strong acid reaction ; peculiar odour of nitrous acid fumes, produced especially by boiling with copper turnings ; no precipitate formed with nitrate of barytes or nitrate of silver, proving the absence of the sulphuric and hydrochloric acids. The liquid containing nitric acid may be neutralized with potash and subjected to evaporation. Crystals of nitrate of potash are formed, which, if mixed in a small tube with fine copper filings, and then acted upon with sulphuric acid, will yield nitrous acid fumes. If a piece of bibulous paper be dipped into a solution of potash, then into the acid liquid, and then dried, the paper will burn with deflagration. Various salts burn with deflagration under similar circumstances, such as the chlorates, bromates, iodates, permanganates, and bichromates ; and Mr Taylor has also observed this with respect to the oxalate of silver.

**HYDROCHLORIC ACID.** (Muriatic Acid, Spirits of Salt.)  
*Symptoms.*—The same as in poisoning by nitric and sulphuric acid.

*Post-Mortem Appearances.*—Similar to those described for the two last acids, except the colour of the stain. There is great thickening about the fauces and corrosion of the parietes of the stomach.

*Treatment.*—As in poisoning by the other mineral acids.

*Tests.*—Nitrate of silver added to the acid solution, forms a white dense precipitate, the chloride of silver. This salt is recognised by its insolubility in nitric acid and liquor potassæ, and solubility in caustic ammonia. It melts like resin, and forms a yellowish coloured sectile mass when dried and heated on platina or glass.



*Vegetable Acids.*

**OXALIC ACID.**—This may be administered by mistake for sulphate of magnesia.

*Symptoms.*—In the dog there occurs vomiting of acid matters, of a black or brown colour. In all animals the symptoms are of immense irritation of the alimentary canal—great difficulty to swallow, thirst, diarrhoea, pain referred to the abdomen; the breathing is laboured and spasmodic; the conjunctiva is injected and the pupils dilated; the heart appears paralysed, and the pulse small and irregular; and with advancing stupor and prostration there are tetanic twitchings of the muscles.

*Post-Mortem Appearances.*—Blanched appearance of the mucous membrane of mouth, fauces, and œsophagus. In most animals the stomach contains much mucosity of almost a gelatinous consistence; the stomach is very seldom perforated; the mucous membrane of the intestine may be inflamed in the duodenum, but the appearances vary according to the length of time an animal lives after the introduction of the poison into the stomach; the blood in the heart and large veins is fluid and dark.

*Treatment.*—The only good antidotes are the carbonates of magnesia and lime; a mixture of lime water and oil might be advantageously given; also chalk suspended in water. The alkalies, potash and soda, and their carbonates, must be avoided.

*Tests.*—The six-sided crystals of oxalic acid may be mistaken for those of sulphate of magnesia and of the sulphate of zinc. Nitrate of silver forms an abundant white precipitate of the oxalate of silver, if added to a liquid containing oxalic acid. The oxalate of silver is soluble in cold nitric acid; and it is dissipated in a white vapour with slight detonation, if heated on a thin platina foil. Sulphate of lime forms a precipitate with a liquid containing oxalic

acid. This precipitate, oxalate of lime, is soluble in nitric, but not in a vegetable acid.

The *tartaric*, *citric*, and *acetic acids* are not poisonous except in enormous doses; and the treatment in these cases is the same as for oxalic acid.

### *Alkalies.*

POTASH, SODA, and their CARBONATES.—A horse received 2 drachms of caustic potash dissolved in 6 ounces of water; this gave rise to violent symptoms of colic, and death in the course of 32 hours.\* Orfila relates the death of a dog from 32 grains of the same agent. The symptoms were incessant vomiting, plaintive cries, foam at the mouth, disturbed breathing, and great pain; on the following day remarkable prostration, and on the third, death.†

*Symptoms.*—They are the same both for potash and soda. In carnivora there is vomiting—in all, superpurgation, or an intense state of gastro-intestinal irritation; the tongue and fauces look red and swollen; the skin is cold and clammy; pulse quick and feeble; great prostration, and even partial paralysis. Females abort. The time

\* Hertwig. *Arzneimittellehre*.

† The injection of caustic potash into the veins has been resorted to as a method of poisoning in animals. Five grains in a drachm of water will kill a dog in the course of two hours, the dog scarcely suffering pain or being convulsed. I have injected doses of carbonate of soda, varying from 10 to 30 grains, in the jugular vein of dogs; the first without inducing much disturbance, but the larger dose so affects the blood as to cause sudden death, whereas repeated small doses give rise to ecchymoses or extravasations of blood beneath the serous and mucous membranes. Blood is voided per anum, turbid and red coloured fluid is effused in the serous cavities, the pulse becomes feeble, great debility supervenes, and the animal dies.

when death occurs is more or less protracted in different animals and according to the dose.

*Post-Mortem Appearances.*—The alimentary canal is more or less inflamed throughout; there are ecchymoses on the mucous membrane of stomach and intestines—sometimes erosions. I have observed a strange appearance resulting from the extravasations as they occur along the prominent points of the temporary longitudinal folds of the large intestine of the dog, especially in the rectum. The genito-urinary organs give evidence of considerable irritation or inflammatory action.

*Treatment.*—Vegetable acids; lemon juice; vinegar and water; oils and fats to saponify the alkali; milk, albumen, and various demulcents, are of considerable use to protect the mucous membrane.

*Tests.*—Action on turmeric paper, and restoring the blue to litmus reddened by acid. Potash and soda give a brown precipitate with a solution of nitrate of silver. The carbonates effervesce on coming in contact with an acid; they yield a white precipitate with nitrate of silver.

**LIME.**—Not so dangerous as potash or ammonia; but though Viborg denied its very actively irritating properties, both Orfila's and Hertwig's experiments show that it has considerable activity, however much the gastric juice may neutralize it. The poisonous dose for dog is from 2 to 4 drachms, and for ox or horse from 2 to 6 ounces.

*Symptoms.*—Accelerated pulse; quick breathing; oedematous swelling of the head and limbs; colicky pains and great debility, with every appearance of an asthenic fever; ending in death in from 2 to 4 days. Hertwig has witnessed such symptoms in two horses which had licked lime freshly laid on the walls.

*Post-Mortem Appearances.*—Redness and ecchymosed condition of the gastro-intestinal mucous membrane.

*Treatment.*—Dilute acids; carbonic acid in soda water; fixed oils; albumen.

*Tests.*—Forms white precipitate with oxalic acid, and with carbonic acid or a soluble carbonate. It is distinguished from baryta and strontia by not being precipitated by diluted sulphuric acid. Forms brown precipitate with nitrate of silver, but none with sulphate of lime.

**AMMONIA and its CARBONATES.**—*Poisonous Doses and Symptoms.*—Moderate doses of the strong liquor ammonia, such as 2 drachms for horse or ox, and from 8 to 12 drops for dogs, give rise to salivation from the mouth, dejected look, increased heat of the skin and out-breathed air, bright red colour of the mucous membrane of the mouth and nose, pulse full and quick, breathing rapid; in dogs there is often vomiting, great uneasiness—later, increased perspiration, and augmented secretion of urine and of the mucous membranes; not unfrequently the buccal mucous membrane is corroded. The above symptoms last from half to 2 hours. Large doses give rise, in addition to the above symptoms, to tetanic spasms, especially of the muscles of the neck, whereby the latter is drawn backwards with considerable force. Much fever exists; the stomach and intestines become inflamed, as also the lungs; the skin is hot, and either fits, coma, or paraplegia supervene, to end in death. According to Orfila's experiments, a dog died in 23 hours from the exhibition of 36 drops of the strong liquor ammoniæ, and death occurred without indication of paralysis or convulsions. Hertwig saw a horse die with symptoms of inflammation of the intestines, from having had 1 ounce of the solution of ammonia; and another horse died in 50 minutes, with violent cramp and symptoms of suffocation, from having received a 3-ounce dose. The liquor ammoniæ is equally destructive if injected into the veins.\*

\* See Hertwig, loc. cit.

*Post-Mortem Appearances.*—Of irritant poisons in general. Inflammation of the gastro-pulmonary mucous membrane; ecchymoses; dark fluid blood in heart and blood-vessels, etc.

*Treatment.*—Vinegar and water; demulcents in the shape of mucilage and albumen, etc.

*Tests.*—Ammonia is known by its odour and volatility. If the solution be dilute, and is ascertained not to contain other alkalies and alkaline salts, a mixture of arsenious acid and nitrate of silver will give rise to the yellow precipitate, the arsenite of silver.

#### *Alkaline Salts.*

**BINOXALATE OF POTASH**(Salt of Sorrel).—The poisonous properties of this salt are due to the oxalic acid, which see.

**BITARTRATE OF POTASH**(Cream of Tartar).—In very large doses, it induces gastro-enteritis and death. Mucilaginous draughts may be had recourse to in such cases.

*Tests.*—A white precipitate is formed by pouring a little lime-water into an aqueous solution of cream of tartar; the precipitate is soluble in an excess of the acid solution.

**BROMIDE OF POTASSIUM.**—This powerful alterative, if given in doses above 3 or 4 drachms, excites the circulation and breathing; the mucous membrane reddens; the skin becomes hot, and covered with tumours which greatly resemble isolated farcy buds. When injected into the veins, either bromine or bromide of potassium induce, in addition to the above symptoms, violent muscular contractions, the animals fall, the excretions acquire a yellow and then a pinkish colour, and death may result from the blood coagulating. Tabourin has injected about 3 ounces of water, containing 100 drops of bromine,

without producing such effects. In the dog, 10 or 12 drops, dissolved in an ounce of water and injected into a vein, prove speedily fatal.—(ORFILA.)\*

**IODIDE OF POTASSIUM.**—In repeated small doses the iodide of potassium is an excitant to the glandular and absorbant system; and in administering it to dogs, I have seen great irritation of the genito-urinary apparatus induced by it. In large doses, it irritates the mucous membrane of the stomach and intestines. According to Maillet, in doses of half a drachm given to a dog, or from 2 to 3 drachms given to the horse, it acts as an irritant poison on the alimentary canal; and 4 drachms in the horse suffice to induce fatal hæmorrhage from the mucous membrane of the stomach and intestines.† These doses, as Tabourin has remarked, appear small; but I think the fact, that Orfila and others consider the poisonous dose of the iodide of potassium higher than Maillet, depends on the mode of administration, and the quantity of water in which the iodide is given.

*Treatment.*—Demulcents, and large quantities of fluid to drink.

*Tests.*—If in the solid state, mix with it a small quantity of peroxide of manganese, and moisten the powder with equal parts of strong sulphuric acid and water; then heat the mass in a glass tube. The purple vapour of iodine is immediately evolved. If the iodide be in solution, add to the clear liquid an equal part of a solution of starch, and then a few drops of strong nitric acid. The blue colour of the iodide of starch produced, will show that the salt is an alkaline iodide. This test may be applied to vomited matters.—(TAYLOR.)

**SULPHURET OF POTASSIUM and SODIUM (Liver of Sul-**

\* Tabourin, Matière Médicale.

† Tabourin, loc. cit.

phur).—Poisonous dose for horse, from 2 to 4 ounces. One drachm is sufficient to kill a dog.

*Symptoms.*—Salivation; colicky pains; borborigmata; laboured and accelerated breathing, the expired air having a sulphurous odour; pulse quick and irregular; muscular twitchings and tetanic spasms; weakness of the hind-quarters, even amounting to paralysis. Death.

*Post-Mortem Appearances.*—Of inflammation of the stomach and bowels.

*Treatment.*—Mucilaginous draughts, with a weak solution of hypochlorite of soda, so long as the breath is tainted with the odour of sulphuretted hydrogen.

*Tests.*—Hydrochloric acid added to the powder, causes the evolution of sulphuretted hydrogen. The subacetate of lead gives an intensely black precipitate, with liver of sulphur.

*Alkaline Hypochlorites.*—*Hypochlorite of Potash* (Eau de Javelle); *Hypochlorite of Soda* (Labarraque's Liquid); *Hypochlorite of Lime* (Bleaching Powder).—Irritants in a feeble degree.

**HYDROCHLORATE OF AMMONIA** (Sal Ammoniac).—Poisonous dose for horse and ox, from 3 to 6 ounces, according to Hertwig; 5 ounces according to Delafond. A drachm and a half or 2 drachms will cause death in dogs in the course of twenty-four hours.—(ORFILA.)

*Symptoms.*—Repeated and small doses lead to loss of appetite, dulness, pallor of mucous membranes, small and feeble pulse, loss of flesh, abundant secretion from the mucous membranes, fluidity and dark colour of blood. A large dose kills as other irritant poisons.

*Treatment.*—No antidote. Give vegetable acids and oleaginous draughts.

*Tests.*—As for the alkalis. It may be obtained from organic liquids by filtration and evaporation.

**NITRATE OF POTASH** (Nitre, Saltpetre).—*Poisonous Doses.*  
—Mr Morton gave 2 pounds of nitre in 6 pounds of water, inducing a purgative and diuretic effect; but in the course of a day all had subsided.\* Horses can support large and oft-repeated doses of nitre under some circumstances. Mr Cupiss of Diss has shown this by experiment.† Huzard said, that 16 ounces, dissolved in 48 ounces of water, was not sufficient to kill, but the dose had to be repeated every eight days for three times to cause death in the horse. Grogner has seen a horse die with that quantity; and even 8 ounces sufficed to induce death by inflammation of the intestines. Cattle have died from doses of 5 to 6 ounces; lambs, from licking walls covered with nitrate of potash. Dogs can support a large dose, if the œsophagus be let free, for they get rid of it by vomiting. The œsophagus being tied, 1 to 2 drachms are sufficient to induce fatal effects.‡

*Symptoms.*—Pulse small and feeble, breathing accelerated, mucous membranes injected, skin cold, and coat staring; uneasiness, great pain in the abdomen; vomiting in dog or pig, purging in the horse and ox; copious urinary secretion; in a short time great prostration of strength supervenes; trembling convulsions (in the dog symptoms of tetanus), hind-quarters paralyzed; dilatation of pupils. Death.

*Post-Mortem Appearances.*—Signs of inflammation of the digestive and urinary organs, etc.

*Treatment.*—Mucilaginous draughts. In the smaller animals vomiting should be excited. There is no specific antidote.

*Tests.*—It may be detected in the urine. Nitrate of

\* Veterinarian for 1837, p. 198.

† Veterinarian for 1837, p. 67.

‡ See Tabourin, *Matière Médicale*, p. 689.



potash decrepitates and deflagrates when thrown on hot coals.

**SULPHATE OF POTASH.**—Injurious only in large doses. The *symptoms* are those common to the alkaline salts, and the chief test is the following:—A solution of sulphate of potash is precipitated by tartaric acid, indicating the presence of potash; a salt of baryta then enables us to recognise the sulphuric acid.

**SULPHATE OF ALUMINA and POTASH (Alum).**—*Dose and Symptoms.*—From 1 to 2 ounces of this salt given to a dog induce considerable suffering, vomiting and purging, weakness of the extremities, general depression, and if the œsophagus be tied, death.

*Post-Mortem Appearances.*—Inflamed state of the mucous membrane of the intestines.

*Treatment.*—Calcined magnesia in water.

*Tests.*—A watery solution undergoes no change with ferrocyanide of potassium or sulphuretted hydrogen. The sulphuric acid is to be tested for with a baryta salt. Treated by potash, a white precipitate of alumina falls, which is re-dissolved by an excess of the alkali. This character distinguishes it from the other alkaline earths.

**CHLORIDE OF SODIUM (Common Salt).**—Brine and souse often prove poisonous. Of brine, Gohier considers the poisonous dose for the horse as from 2 pounds and a half to 3 pounds. For cattle, according to Hertwig, from 4 to 5 pounds; and for dogs, from 1 to 2 ounces. Reynal has written on the poisonous properties assumed by souse, four or five months after its preparation. He gives as the fatal doses, for horse,  $3\frac{1}{2}$  pints; for pig,  $\frac{1}{2}$  pint; for dog, 6 to 7 ounces.\*

\* Recueil de Médecine Vétérinaire, 1855.

*Symptoms.*—Loss of appetite, thirst, dulness, in some animals vomiting; flatulence, diarrhoea, vertigo, convulsive movements, involuntary mastication with accumulation of foam round the mouth; in pigs the mucous membrane of the mouth acquires a pink hue; the eyes are bright, pupils dilated; the animals cannot stand erect, the hind-quarters become paralyzed, and in the course of eight hours after the exhibition of the poison the animal dies.

*Post-Mortem Appearances.*—General signs of gastrointestinal inflammation, with more or less irritation of the gastro-urinary organs. The mucous membrane of the stomach is dry, and stained here and there by infiltrated blood. The blood throughout the body is fluid. The cerebral substance is sometimes infiltrated with blood; the chief part affected is the cerebellum and medulla oblongata, and the membranes over them are injected with blood, or bear the signs of blood-extravasation. Between the pia mater and cerebral substance there is usually serosity of a brown-red colour.\*

*Treatment.*—Mucilaginous draughts and enemata. Cold water bath, general blood-letting, acidulated drinks, cold ablution over the head.

*Tests.*—By evaporation the chloride of sodium deposits in the shape of cubic crystals. Salt is insoluble in alcohol. If strong sulphuric acid be poured on it, abundant acid vapours are evolved; and when a rod, dipped in strong ammonia, is brought near to them, a dense white cloud is formed. Nitrate of silver forms a white precipitate with a solution of chloride of sodium.

\* Recueil de Médecine Vétérinaire. Paris, May 1856, p. 356.

## METALLOIDAL POISONS.

**PHOSPHORUS.**—*Poisoning Dose*—Horse—20 to 30 grains, according to Hertwig, or 8 grains taken for four days (Lowag). Tabourin says that 4 grains in 2 drachms of oil injected in the jugular vein induce instantaneous death. Dog,  $\frac{1}{8}$  to 1 grain (ORFILA).

*Symptoms.*—Violent inflammation of the digestive apparatus. Great exaltation of the nervous system; excitation of the genital organs. Thirst; the breath gives an aliaceous odour; dark coloured matter is vomited by the dog; diarrhœa; the fæces are luminous.

*Post-Mortem Appearances.*—Intense inflammation of the digestive organs. Perforation of the stomach has occurred in dogs (Orfila). Invagination of small intestines. Congestion of the brain. The flesh has the odour of phosphorus, and appears luminous in the dark. Phosphorus can be detected in the organs, in the free state, for more than a fortnight. Putrefaction is often strangely retarded.—(Ann. de Med. Vét., Bruxelles, 1855, p. 134.)

*Treatment.*—Avoid oleaginous draughts; exhibit mucilaginous and albuminous drinks, with carbonate of magnesia. Emetics to dog.

*Tests.*—Insoluble in water; bits of it may be found in the vomited matters and in the intestines. Sulphuret of carbon will dissolve free phosphorus, and it can by this means be separated from other matters with which it may be mixed in the stomach. Phosphorus is soluble in alcohol, ether, and oils. The contents of the viscera are luminous in the dark; and, if warmed, a white cloud, with acid reaction, rises from the portions of phosphorus which have remained free.

**BROMINE and IODINE.**—The poisonous properties of these two substances are analogous.

Two drachms of bromine killed a dog in 5 hours (Glover). According to Orfila, from 10 to 12 drops in 1 ounce of water injected into the jugular vein of a dog prove suddenly fatal; 5 to 6 drachms of iodine are sufficient to kill a dog in a few days. A horse was attacked with colic from having been made to swallow half an ounce of iodine (Tabourin). Patu saw many horses die from the effects of 2-drachm doses of iodine injected into the veins.

*Symptoms.*—General symptom of disturbance; severe pain in the abdomen; salivation; diarrhœa (vomiting in the dog); prostration of strength; hot skin; dyspnœa choryza; the conjunctiva reddens, the pupils dilated; convulsions, vertigo, and death supervene.

*Post-Mortem Appearances.*—The mucous membrane of the œsophagus and stomach is found inflamed, ulcerated, and detached in parts; small circular ulcers, surrounded by yellow areolæ, with yellow and brown patches scattered over the membrane, especially near the pylorus.—(ORFILA).

*Treatment.*—Emetics to dog, etc. Warm water; starchy, mucilaginous, or albuminous draughts. Orfila recommends starch, opium, and antiphlogistics. In cases of poisoning by tincture of iodine, carbonate of soda is useful. Starch enemata. Starch should be continued until the fæces or vomited matters are coloured blue.

*Tests.*—Bromine is identified by its colour and odour. It is soluble in water, alcohol, and ether. If it exists as hydrobromic acid or a bromide, chlorine should be passed through the suspected liquid. A red colour results from the bromine being set free, and it may afterwards be separated by ether.—(TAYLOR). Iodine gives a blue, green, or dark colour, to such organic liquids. It has a peculiar odour.

**SULPHUR.**—*Poisonous Doses.*—Ten to 12 ounces induce violent pains in the bowels (Collaine). Tabourin says that 8 ounces are sufficient to poison a colt, but 16

ounces are required for adult horses. Cattle are less susceptible.

*Symptoms.*—Dulness; loss of appetite; colicky pains; sulphuretted hydrogen is found in great abundance in the intestines, and there is fetid superpurgation; the pulse is small and quick; the skin feels cold and clammy; and the animal shortly dies.

*Post-Mortem Appearances.*—Injection and lividity of the gastro-intestinal mucous membrane; often gangrene; sulphur is met with in the faecal matters; there is great fluidity of the blood; ecchymoses in the heart and on the surface of the lungs. Waldinger says that the flesh of ruminants is rendered unfit for human food owing to the odour imparted to it.

*Treatment.*—Exhibit chlorinated lime; oleaginous purgatives. If the prostration is great give alcohol and ether. Persist in the use of enemata. Puncture of the intestine for the escape of gas may retard death.

*Tests.*—Characteristic odour.

#### METALLIC IRRITANTS.

Several broad chemical distinctions may be drawn between metallic and non-metallic irritants. The metallic are all precipitated in neutral solutions by sulphuretted hydrogen gas, forming insoluble sulphurets of various colours. Hydro-sulphuret of ammonia precipitates them all excepting arsenic. The ferrocyanide of potassium forms ferrocyanides of various colours with all, excepting arsenic and its compounds, the vegetable salts of antimony, and the chloride of gold.\*

**ARSENIC—ARSENIOUS ACID (White Arsenic).**—*Poisonous Doses.*—Forty grains if in solution, but if solid, from 1 to

\* Taylor on Poisons, p. 308.

2 ounces are destructive to horses. Sheep die if they swallow 2 drachms of it. Dogs, from their facility in vomiting, sometimes escape after taking large quantities; but if the œsophagus be tied, 2 grains suffice to kill (Orfila). In small and oft-repeated doses large quantities of arsenic may be given, and it is in great use to get horses into condition.

*Symptoms.*—Violent pain in the bowels; pulse quick, feeble, and often irregular; respiration laboured and quick; dog and pig vomit, and the vomited matter is of a yellowish colour, which is supposed to be due to a partial conversion of the poison to a sulphuret; intolerable sense of thirst; violent purging, with tenesmus; the urine becomes of a reddish colour; the animal cannot stand erect; there is great dulness and general depression; the natural heat of the body diminishes; the pupils are dilated; coma, paralysis, and sometimes convulsions occur, and the animal dies. In giving arsenic as a medicine, chronic poisoning may be induced, characterized by inflammation of the eyes, cutaneous eruption, jaundice, desquamation of cuticle, and loss of hair.

*Post-Mortem Appearances.*—The principal lesions are met with in the stomach and intestine; and it is a strange fact, that the characteristic lesions of the stomach occur even if arsenic has been exhibited by applying it on an open wound, or otherwise introducing it in the system. The appearances are those of inflammation of the stomach, the mucous membrane being intensely red, coloured by extravasated blood. The stomach generally contains ropy, bloody mucus. Arsenic is seen adhering to the coats of the stomach, especially where these seem very actively inflamed and even thickened. Ulceration is rare, but in the horse the whole intestine, especially the cæcum, is intensely inflamed. The morbid appearances of the heart, lungs, and blood-vessels are not characteristic, but such as are met in cases of blood disease.

*Treatment.*—Exhibit purgatives to herbivorous animals. Oil, lime-water, charcoal, and magnesia may be of service. The hydrated peroxide of iron has been found useful in the dog by Orfila, and in the horse by MM. Renault and Bouley, jun. The carbonate of iron, or the rubigo ferri, may be exhibited instead of the hydrated peroxide in oft-repeated doses. In treating an omnivorous or carnivorous animal, emetics should not be lost sight of.

When the poison has acted on the system every mode of treatment will prove ineffectual. Orfila recommends bleeding and diuretics. The Italians give excitants and alcoholic draughts. Opiates will be found useful.

*Tests.*—*Marsh's Test.*—Founded upon the decomposition of arsenious acid by nascent hydrogen, the gas arseniuretted hydrogen is formed, and known by the following properties:—It burns with a bluish flame and thick white smoke. It produces a dark stain on a piece of porcelain or glass held in the flame. A slip of paper, moistened with ammonio-nitrate of silver, and held at a distance of an inch above the flame, will be coloured yellow.

Fit a large, wide-mouthed bottle with a cork perforated by a funnel reaching to the bottle, and a small tube of german glass, bent once at a right angle, passing merely through the cork. Introduce pure zinc and diluted sulphuric acid, and when all the air has been expelled, heat the horizontal part of the small tube with a spirit lamp. No deposit is formed if the materials be pure. Now pour in the suspected fluid through the funnel—and a dark, metallic crust is deposited immediately beyond the heated part of the tube if arsenic be present.

*Reinsch's Test.*—Filter the suspected liquid in the ordinary way; boil a portion strongly acidulated with muriatic acid; introduce in it, when hot, a bright slip of copper, and boil for some time. The presence of arsenic is ascer-

tained by a metallic grey deposit on the copper ; after some minutes, if the copper is unchanged, it may be inferred that there is no arsenic, or at least in minutest quantities. If the grey deposit take place, it must be dried and heated in a reduction tube ; the octohedral crystals of arsenious acid will be deposited on the walls of the tube.

The same process (Reinsch's) may be applied for the detection of arsenious acid in the tissues. The latter are cut into small pieces, and boiled in a mixture of one part of pure muriatic acid and eight of water, until they are reduced to a soft magma. The liquid is to be strained and the residue pressed ; the copper foil is then introduced. To save time, the straining may be dispensed with.

The poison may still be detected in the tissues, in combining the Flander's and Reinsch's process—*i. e.*, "by carbonizing the tissues with sulphuric acid, and then digesting the dry ash in muriatic acid and water."—(TAYLOR, 362.)

In a solid state, arsenic is known by its volatilization with white smoke if heated on a foil of platina. White arsenic in vapour has no odour ; is not dissolved in boiling distilled water ; it floats on the surface in a sort of film, or is aggregated in small lumps in the bottom of the vessel.

"If the powder be heated with a solution of hydrosulphuret of ammonia in a watch-glass, there is no change of colour, as there is for most metallic poisons ; on heating the mixture, the white powder is dissolved ; and on continuing the heat until the ammonia is expelled, a rich yellow or orange red film is left (sesquisulphuret of arsenic), which is soluble in all alkalies, and insoluble in muriatic acid.

Arsenic in solution in water may be discovered by the crystallization on a slip of glass of octohedral crystals, presenting triangular surfaces by reflected light.



The solution in water, treated by ammonio-nitrate of silver, gives a rich yellow precipitate of arsenite of silver, passing rapidly to a grey-brown colour.

The test is made by adding to a strong solution of nitrate of silver a weak solution of ammonia, till the oxide of silver at first precipitated is nearly re-dissolved.

The solution of arsenic, treated by ammonio-sulphate of copper, gives a pale green precipitate, or a bright green, according to the quantity of arsenic.

This test is formed by the addition of liquor ammonia to a weak solution of sulphate of copper, until the precipitate at first produced is re-dissolved.

The solution, if previously acidified, may be tested by a current of sulphuretted hydrogen gas; a yellow precipitate is then produced (orpiment). This precipitate is insoluble in water, alcohol, and ether, in all acids, vegetables and minerals, except pure nitric and nitro-hydrochloric acids; it is soluble in caustic potash, soda, or ammonia, forming colourless solutions.

#### *Insoluble Preparations of Mercury.*

**MERCURY.**—Metallic mercury is an inert substance; but the unguentum hydrargyri, which contains the metal in a minutely subdivided state, and partially in the condition of oxide, induces poisonous effects when applied with friction to the skin. The horse is of the domestic animals the most unsusceptible to its action. From 3 to 4 ounces of the ointment rubbed daily on the skin induce symptoms of salivation, and death in from a fortnight to a month. Ruminants are much more liable to suffer, and Gasparin has seen lambs die when the ewes which suckled them had been rubbed with the ointment. Both dogs and cats are readily affected by similar applications.

**CALOMEL—CHLORIDE OF MERCURY.**—This agent may

prove destructive from its partial transformation into corrosive sublimate, on meeting with alkaline chlorides in the alimentary canal. 'Mr Swan found that calomel given to a full-sized dog, in doses of from three to four grains, night and morning for a week, gave rise to ulceration of the gums, a discharge of bloody saliva, loss of power in the hinder legs, and death on the ninth day. The stomach and all the thoracic and abdominal viscera were sound, with the exception of some appearances of chronic inflammation in the large intestines. A similar experiment on another dog gave like results; and in both cases the ganglia of the sympathetic nerves were found inflamed.'—(TAYLOR, p. 417.)

Mr Percivall made some interesting experiments on the action of mercurials on the horse. The conclusion he comes to is, that 'it is surprising how comparatively little will, in some horses, take effect, while others appear all but unsusceptible of its action. I have known,' says Mr Percivall, '10 grains of calomel, given twice a day, make the mouth so sore on the fifth day, that the horse (a four-year old one), cudded his hay;'—opposed to which, he speaks of a mare who took '6 drachms of calomel, nearly 2 ounces of blue pill, and have 7 ounces and a half of blue ointment rubbed into her thighs; salivation was not produced, nor, indeed, was there any very evident symptoms of sore mouth, for she never cudded her hay. The mercury, however, affected her in another and in a fatal way.'

An interesting case of poisoning in a cow by the chloride of mercury, is given by Mr Carter, of Northowram, Halifax, in the *Veterinary Record* for 1848. It runs as follows:—  
'Nov. 29, 1847.—At two o'clock P.M., I was called to attend a cow, the property of Mr C——, when the following symptoms were present:—Pulse eighty, but weak; grinding of the teeth, but no discharge of saliva; the gums have a pink hue all round the incisors, and the

mouth is extremely fetid ; the animal is down, and scarcely able to rise ; profuse diarrhœa, with intense fœtor of the evacuations ; legs, ears, and surface of the body cold ; loss of appetite and rumination ; milk diminished from seven quarts to one pint per diem. I was informed by the owner that she was suffering from gonorrhœa, for which he obtained a recipe from a neighbouring farmer as follows :—

12 ounces Glauber's Salts,

6 „ Jalap,

2 „ Calomel,

4 „ Sulphur.

A mistake was here made—2 ounces of calomel being written instead of 2 drachms. The above was administered on the night of the 27th. Knowing this, I lost no time in giving the animal a quantity of albumen of eggs, with wheaten flour gruel ; and ordered the same to be repeated at night, and also in the morning, with frequent drenches of milk. Exhibited an oleaginous purgative with Tinct. Opii ʒj., and ordered enemata to be thrown up twice or thrice a day.' Notwithstanding a continuance of unfavourable symptoms, under appropriate treatment the cow recovered January the 8th, when the milk she gave amounted to a gallon twice a day ; the appetite was good, and she appeared quite convalescent.

Hertwig says that in doses for the horse, averaging from 3 to 6 drachms—for cattle, from 1 to 2 drachms—for pigs the same—for sheep, from 15 to 30 grains—and for dogs, from 6 to 30 grains, purgation ensues in from 24 to 36 hours—in the dog often sooner, whereas in sheep it may be delayed to the third day. If such doses be repeated from two to four times in a day, and perhaps continued for two or more days, the purgative effect is much more decided ; the fæces are very fluid, and continue from three to six days to be passed in abundance, sometimes mingled with blood and very offensive. The animals

become very dull, thin, lose their appetite, and symptoms of the effects of mercury in the system manifest themselves, such as salivation, etc. The diarrhœa often cannot be checked by the most energetic remedies, and the animals die from prostration and low fever. This is mostly seen with ruminants, especially sheep; not so readily amongst horses, and least of all with dogs. With reference to dogs, vomiting is so constantly excited, that the calomel is not absorbed but ejected.

*Post-Mortem Appearances.*—Stomach and intestines pale and flaccid; the blood-vessels are empty, and the appearance of the organs blackened or grey; the intestine often quite empty; sometimes the mucous membrane is of a bluish red or leaden hue, inflamed, deprived of its epithelium, with extravasations of blood upon it, or with excoriations, of which the borders are pale or whitish. In those animals having a gall-bladder, this organ is full of bile; the liver and other viscera appear soft and fragile. In the ox and sheep such are the appearances; and there are generally red patches, due to blood-extravasation or to inflammation, in the fourth stomach, duodenum, and rectum.\*

*Treatment.*—Albumen; wheaten flour gruel; sulphuret of iron; astringents.

*Tests.*—1. So insoluble in water, that it requires 12,000 parts of the latter to dissolve one part of calomel. 'Soluble in strong nitric acid, but decomposed by it into corrosive sublimate and perntrate of mercury. Strong muriatic acid transforms it to corrosive sublimate and metallic mercury, and nitro-muriatic acid converts it readily to corrosive sublimate in boiling. 2. When heated on platina over a spirit lamp, it is sublimed, but it is not so volatile as corrosive sublimate; during sublimation it is

\* Hertwig, *loc. cit.*

partially decomposed into that substance and metallic mercury. 3. When dropped into a solution of iodide of potassium, it is slowly turned of a dingy, greenish black colour; but if the iodide be much diluted, the powder acquires a yellow colour. 4. By a solution of potash it is turned black, chloride of potassium being formed in the liquid. 5. It is also turned black by a solution of hydro-sulphuret of ammonia. 6. It gives a silvery stain when rubbed on clean copper with diluted muriatic acid. 7. It yields a ring of metallic mercury when heated with the carbonate of soda. 8. It is decomposed by a solution of protochloride of tin, and reduced to metallic mercury.'—(TAYLOR on Poisons, p. 420.)

**RED PRECIPITATE—RED OXIDE OF MERCURY.**—From 2 to 4 grains induce vomiting and abdominal pain in the dog. Symptoms of colic are manifested in the horse after the exhibition of from 8 to 15 grains of red precipitate; and if the dose be increased to 1 or 2 drachms, or if several doses be administered in succession, inflammation of the stomach, enteritis, and death, result.—(HEERWIG.)

*Tests.*—It is insoluble in water. Hydrochloric acid dissolves it, and forms with it a compound similar in properties to corrosive sublimate. It becomes black when heated, and red again on cooling. Continued heat dissipates it, completely distinguishing red precipitate from other powders of the same colour.

**IODIDES OF MERCURY.**—Very active agents and irritant poisons. The biniodide of mercury is not quite so deadly, though it induces effects similar to those which follow the administration of corrosive sublimate. 'They are quite insoluble in water, and both yield a mercurial sublimate when heated with carbonate of soda. The scarlet iodide is further known by its becoming yellow when heated, and again red on trituration.'—(TAYLOR.)

**CINNABAR—VERMILION—PERSULPHURET OF MERCURY.**

—Little is known of the poisonous properties of this agent. Dogs have been poisoned by it in doses varying from 30 to 70 grains.

Turbith mineral, and other insoluble preparations of mercury, are poisonous, but rarely resorted to for the destruction of life. They act more tardily, but like other mercurial compounds.

*Soluble Preparations of Mercury.***CORROSIVE SUBLIMATE—BICHLORIDE OF MERCURY.—**

*Poisonous Doses.*—Two drachms to half an ounce dissolved in water, in the horse; cattle die from the effects of 2 drachms; and sheep are poisoned in the course of twelve hours by 1 drachm. From 3 to 6 grains, and even less, if introduced beneath the skin, will kill a dog. The action of corrosive sublimate is more marked on carnivorous than herbivorous quadrupeds. Hertwig remarks, that from 4 to 6 grains will produce in dogs violent and bloody vomiting, bloody diarrhoea, and paralysis; and this in the course of seven, twelve, or thirty hours. From 20 to 30 grains of the bichloride of mercury have been exhibited in a ball daily to horses, without inducing apparent symptoms; and several horses have even taken two such doses daily, for eight days, with a similar result. The exhibition of 1 scruple to 2 drachms daily produces, by the time a horse has had from 10 to 15 drachms, loss of appetite, very abundant secretion of urine, diarrhoea, with discharge of blood per anum, great debility, low fever, and death. One drachm at a dose causes acceleration of pulse, colicky pains, and redness of the mucous membrane; but all these symptoms disappear in from two to four hours. Half an ounce of corrosive sublimate, dissolved in 3 pounds of water, gives rise to abdominal pain, active salivation, and death in

twelve hours. Mr Percivall relates an interesting experiment on the action of bichloride of mercury : \*—‘ A brown gelding, having incipient glanders, and who had previously been taking large doses of cinchona, without producing any effects either on the constitution or the disease, was, in consequence of becoming decidedly glandered, submitted to the operation of mercury. He commenced with taking hydrarg. bichloridi, gr. x., which by degrees was augmented, until the large dose of 3v. was given. The horse now, for the first time, left part of his food unconsumed, and his pulse became accelerated. With four days of intermission of medicine he recovered his appetite. The next dose administered, was the enormous one of 3vi., under the effects of which he succumbed. The following morning he showed alarming symptoms of illness, expressing great pain, frequently lying down and rising again, and being without perceptible pulse; shortly after which, most profuse perspiration broke out upon him. He survived, however, until the next day. Intense inflammation had seized the lining vascular membrane of the stomach; large portions of effused coagulable lymph adhered to it; and the lymph had a reddened appearance, as though it had already had vessels shooting into it, which was afterwards proved to have been the case. The cuticular coat exhibited no change; and there was but a slight blush of inflammation upon the internal surface of the intestines. Altogether, this horse took, and within twenty-four days, the astonishing quantity of 4 ounces and 12 grains of bichloride of mercury.’ Corrosive sublimate, given in solution, inflames the mucous membrane of the mouth. Its taste is described as powerfully austere and metallic. I have known horses poisoned by the application of corrosive sublimate to raw surfaces, especially when used as a dressing in canker of the feet. Four to 10

\* Percivall's Effects of Medicines. London, 1850.

grains of the bichloride to an ounce of water, irritates and inflames the part to which it is applied. Thirty grains to the ounce corrode and kill. The poison is absorbed, and induces gastro-enteritis, inflammation of the peritoneum, carditis, and death.

*Symptoms.*—These have been mentioned above, but may be briefly reiterated here—consisting in loss of appetite; intolerable thirst; violent pains of the belly; diarrhoea, with offensive and bloody evacuations;—in dogs, vomiting of mucus with blood;—palpitation of the heart; difficult breathing; and in ruminants there is exhausting cough. These symptoms are followed by great dulness, stupor, trembling, salivation, and death.

*Post-Mortem Appearances.*—Inflammation, and even ulceration of the mucous membranes of the stomach and intestines; inflammation of the heart, lungs, and even kidneys. Red or black spots of blood-extravasation are likewise seen on the mucous membranes.

*Treatment.*—White of egg in water; mild linseed tea; farinaceous draughts. Gluten has been much recommended. Small doses of chlorate of potash have been recommended by Mr Allison in man, to check excessive salivation.

*Tests.*—The powder, dropped into a solution of iodide of potassium, turns the liquid of a bright scarlet colour. A yellow precipitate is obtained, by adding liquor potassæ to a solution of corrosive sublimate; a white with ammonia, but a black precipitate with hydrosulphuret of ammonia, or sulphuretted hydrogen gas. Protochloride of tin yields with it a deposit, which is at first white, then slate grey, and lastly, nearly black. 'There are various ways in which galvanism may be applied to the detection of mercury in corrosive sublimate. Dr Wollaston, on one occasion, employed an iron key and a guinea: he placed a drop of the suspected solution on a surface of gold, and



touched it and the gold with the key; the mercury was deposited on the gold in a bright silvery stain. The following is a ready method of producing the metal:—Place a few drops of the solution on a clean surface of copper, and slightly acidulate it with muriatic acid; then touch the copper through the solution with a slip of zinc foil. Wherever the copper is touched by the zinc, the mercury is deposited; and on washing the surface with diluted muriatic acid or ammonia, a silvery stain is left, which is immediately dissipated by the heat of a spirit lamp.’—(TAYLOR on Poisons, p. 409.)

Other soluble mercurial compounds, such as the nitrates and sulphates of mercury, are poisonous; but little is known of their action with reference to the domestic animals.

All the preparations of mercury, if continued to be given in adequate dose, will induce in animals a constitutional state, which is termed ‘the Mercurial Cachexia.’ The chief *symptoms* of mercurialization—for thus have the effects of mercury been spoken of—are small and feeble pulse, quickened and somewhat laboured breathing, loss of appetite, difficulty experienced in swallowing, tongue and fauces swollen, profuse salivation and diarrhœa; the fæces are peculiarly offensive, and the urine acquires a pale yellow colour and offensive odour; the animals are almost unable to stand, the articulations become rigid; convulsions may supervene; there is œdematous infiltration of head, limbs, and beneath chest and abdomen; females abort (Bouley); wounds acquire a gangrenous aspect. There is an eruption of the skin (mercurial erythema);\* passive hæmorrhage; animal heat diminishes gradually, and death ensues.—(TABOURIN, *Mat. Med.*, p. 513.)

\* See Percivall’s *Effects of Medicines*, p. 9. Also, Etterlin in the Swiss ‘*Archiv für Thierheilkunde*,’ 12th vol., p. 359.

*Post-Mortem Appearances.*—Signs of inflammation of the intestines; effusion of serum in the pleural and pericardial sacs; abscesses in the lungs; glands softened; bones excessively fragile.

*Treatment.*—The administration of mercury must be suspended when the above symptoms are observed. Albuminous draughts must be given. In carnivora it is desirable to excite vomiting. Chlorate of potash may be tried in small doses to check salivation. Sulphur, cinchona, and both vegetable and mineral astringents, are recommended.

**LEAD.**—Metallic lead is not generally considered a poison. If inert in itself, its compounds, formed with acids in the stomach, may prove destructive to life. I have known shot to be given to broken-winded horses for the purpose of deceiving purchasers—the symptoms of broken wind not being so manifest after the introduction of a certain quantity of metallic lead in the stomach,—but I am not aware that the animals suffered from this reprehensible practice. Large doses of metallic lead have been given to dogs without effect. Dr A. T. Thomson has maintained that the only poisonous compound of lead is the carbonate. Litharge often proves destructive to animals; but there is nothing to prevent its conversion to a carbonate in the stomach. The acetate has been proved also a poisonous salt; and Mitscherlich has observed that it is more energetic when mixed with acetic acid than when exhibited alone. Mr Taylor remarks, that it is not very easy to perceive how the nitrate and chloride should become converted into a carbonate within the body.

Tanquerel de Planches has considered several forms of lead poisoning in man. They are—1st, Primitive saturnine intoxication; 2d, Painter's or lead colic; 3d, Saturnine athralgia; 4th, Lead palsy; and the last he calls 'ence-

phalopathie saturnine,'—lead poisoning associated with convulsions, or delirium, or coma. In animals various affections seem to be likewise produced by the entrance of lead into the system. In the present state of knowledge, we may accept a twofold division of effects—the one due to repeated doses of lead entering the system, and inducing a condition termed *plumbism*; and the other consisting in the 'Encephalopathie saturnine' of De Planches, known by the name of *stomach staggers*, *head disease*, *grass disease*, and *lead poisoning of cattle*. Both forms of lead poisoning are enzootic, the first in the vicinity of smelting works, and the second on fields where town manure containing the refuse of painters' shops has been deposited.

*Lead poisoning in the vicinity of smelting works.*—The '*Haukrankheit*' of the Germans. It is due to minute particles of lead, or its oxide, carried up the flues of furnaces, and blown by the winds over pastures where animals feed. Perhaps the minutely subdivided oxide of lead is converted into a carbonate by exposure to the air.

*Symptoms.*—The gradual entrance of lead into the system, whether in the above form or in the water an animal may drink,\* leads to impaired appetite; in the ox,

\* With reference to the taking in of lead in solution, the subjoined case is of particular interest. 'A farmer, who kept a dairy near Glasgow, lately lost eight cows in the following manner:—Having bought a large wooden tub from a dealer in second-hand articles of that kind, it was filled with water, and when delivered at the farm-house appeared perfectly clean. Boiled food for the cows was accordingly put into it, and then distributed among eight of the cows; three of the eight very soon showed symptoms of sickness and distress, owing, as was supposed, to their having been the last supplied with the food, which had been next to the bottom and sides of the tub; and, after suffering great agony, roaring and writhing in a manner most distressing to witness, they died in the course of the next day, and the day following a farrier was got to open and examine the dead cows, and he found manifest symptoms of poison having been the cause of death. The other five were

irregular rumination; increased thirst; violent attacks of colic; constipation, dung hard, and rarely voided; urine scanty and pale. The animals obstinately stand, are hide-bound, and with staring coat; the head is sunk low; the back is arched and stiff; the tail depressed; the region of the stomach distended; the pulse is small, hard, and slightly increased in frequency; eyes fixed, but no redness of the conjunctiva or other mucous membranes; sometimes grinding of teeth. According to Shenton and others, the gums and teeth are of a grey or blue colour; the heat of the body is diminished; breathing disturbed; locomotion tolerably free. The first stage, as just described, seldom lasts over three days, when fever sets in with changeable temperature of the body, accelerated pulse, distinct heart-beats, increased respiration, and redness of the mucous membranes; the grinding of the teeth is more marked, and there is champing of the jaws and flow of saliva from the mouth; the eyes are motionless and rarely closed; appetite, rumination, and defecation entirely suspended; convulsions occur, during which the animals utter low groans. Here-upon supervenes considerable debility of the hind parts of the body. This second stage lasts for two, three, or four days, when the convulsions are very marked, the belly tucked up, and the animal dies, seized with cramps over the body, the breathing being very laboured, and, indeed,

affected less virulently, but were evidently becoming worse from day to day, in spite of every remedy which was prescribed, and were therefore killed, to save them from more protracted suffering. The farmer thus lost eight cows, which, he says, averaged of a value of L.14 a-piece, L.112 in all. One of the staves of the tub having been sent to a chemist, was found to have been impregnated with sugar of lead nearly throughout its whole thickness; so that, he remarked, it contained as much as would have killed forty cows. The vendor of second-hand tubs said he had bought the one that had proved so fatal at a chemical works.'—*Glasgow Mail*. See *Veterinarian*, 1857, p. 157.

all symptoms of apnoea present, so that the beast gasps for breath and dies.—(FUCHS, HERING, SHENTON.)

*Post-Mortem Appearances.*—The liver pale and soft; the rumen distended with air; the omasum hard, and its contents dry, with the mucous membrane nearly black and its epithelium easily pulled off; the intestines more or less reddened at various parts. Schwepfer says of the muscular system, that it is flaccid, pale, and bloodless.

*Treatment.*—As a preventative, sulphuric acid may be given often in water or linseed tea, and 2 or 4 ounces of sulphate of soda exhibited every two or three days. When active symptoms are present, it has been recommended to bleed; at all times clysters are of use. At first a strong dose of sulphate of soda or magnesia, and then every two or three hours about 2 ounces of the same salt, should be exhibited in linseed tea. Opium is recommended to allay pain, if the latter be intense; sulphuretted hydrogen is a chemical antidote, forming with the lead an insoluble black sulphuret; alum has proved useful in cases of lead poisoning. M. Melsens has found the iodide of potassium the most effective antidote to poisoning by lead compounds, the soluble iodide of lead being eliminated from the system by the kidneys.

*Tests.*—Lead is to be sought for in all the organs, especially the chylopoietic viscera and the spleen. The latter is said to offer many facilities for analysis, from its peculiar texture and freedom from fatty matter. 'The organs should be digested in aqua regia, over a slow fire, until all the soluble matters are separated. The liquid, which should then be clear, and pale brown, is cooled, filtered through calico, and evaporated. The dried residue is charred in a Hessian crucible; boiled with dilute nitric acid; filtered, dried, and dissolved in dilute hydrochloric acid. This solution will usually be sufficiently pure to exhibit, with appropriate re-agents, the characteristic re-

actions of lead and its compounds. It should give a black precipitate, with sulphuretted hydrogen and hydro-sulphuret of ammonia; a white precipitate, with sulphuric acid and soluble sulphates; and bright gamboge yellow crystalline precipitates, with iodide of potassium and chromate of potash.' This is the method of analysis pursued by Dr George Wilson, and mentioned by Mr Dun in his work on Veterinary Medicines.

*Lead poisoning in Cattle on grass fields—Stomach staggers of the Ox—Head disease.*—Mr Cuming, formerly of Ellon, drew the attention of the Aberdeenshire farmer to the true cause of a very destructive disease which occurs on fields where the police manure is driven. The refuse of paints, and the sheet-lead thrown by grocers from out of their tea-chests, or pieces of painted oil-cloth, may be deposited on land amongst the town manure; and when cattle are grazing, they are apt to swallow of the deleterious articles. Occasionally a field on which cattle have been for years without suffering becomes dangerous, from the lead deposited there in former times being dug up and coming to the surface again. This is the explanation of the cause, on many occasions, when stomach staggers occur, and there is a certainty that for long no police manure has been distributed over the land. The lead poisoning, with symptoms of staggers, may be confounded with a form of stomach staggers due simply to indigestion.

*Symptoms.*—An ox that has been feeding well, suddenly loses his appetite, ceases to ruminate, stands apart from the herd, with arched back and staring coat, with an anxious expression, staring eye, sometimes a protruded tongue, and foaming at the mouth; the pulse is variable, sometimes slow and oppressed, and at other times small and somewhat accelerated; the breathing is rather

quick, and from time to time the muscles of the body are observed spasmodically contracted and twitching. The ox may run round or forwards, be taken with all the symptoms of violent delirium, dashing his head right and left, as if labouring under an attack of inflammation of the brain. There are periods of exacerbation and remission; but the animal is so soon exhausted, that unless it injures itself when reeling and dashing to and fro, it is soon worn out by the complaint.

*Post-Mortem Appearances.*—The stomachs may appear a little congested, and, in some cases, with some extravasation of blood. The brain is likewise congested. The third stomach is always closely impacted with food, and on washing this, as well as the contents of the first and second stomach, lead, in the form of refuse paint, or as sheet-lead, may be discovered.

*Treatment.*—The antidotes mentioned at page 172 may be tried. Antacids and purgatives are strongly to be recommended.

It is either the oxide or the carbonate of lead which, introduced into the system, gives rise to the diseases above described; of the other preparations of lead we shall say little.

**GOULARD'S EXTRACT.**—*Subacetate of Lead*, known as the *sugar of lead*.—This poison, much used by some Veterinarians, may be exhibited in various doses by mistake. It gives rise to purging and to vomiting in some animals. The treatment consists in the exhibition of the sulphates of soda and magnesia; of milk and albumen in large quantities.

**NITRATE OF LEAD.**—‘Dr Christison found that 400 grains of this salt killed a dog in sixteen hours.’

**CHLORIDE OF LEAD.**—This poison may exist in spring water as a contamination. It is soluble in 30 times its weight of water.

**SULPHATE OF LEAD.**—This preparation is almost inert. As much as 150 and 300 grains of it have been given to dogs without inducing disturbance, and Orfila has given as much as 554 with similar result.

The *Chromate* and the *Iodide* of lead may poison, but I am not aware of any cases having fallen under the notice of Veterinarians.

**COPPER.**—All the salts of copper are poisonous. They may destroy life if used as caustics, or when large doses are introduced into the stomach.

**SULPHATE OF COPPER.**—Poisonous doses :—Horse, 1 ounce. Two drachms introduced beneath the skin of the dog will kill. Tabourin says that 10 grains have proved fatal.

*Symptoms.*—Vomiting of blue or greenish matter. Colicky pains; diarrhoea; tenesmus; paralysis, insensibility, and indications of tetanus. In cases of chronic poisoning by this agent, there is emaciation of the frame and tremors of the limbs.

The **SUBACETATE OF COPPER**—*Verdigris*.—The **SUBCHLORIDE OF COPPER**, and the **CARBONATE OF COPPER**, or natural verdigris, may all kill, inducing similar symptoms to those observed after the exhibition of the sulphate.

*Post-Mortem Appearances.*—Of inflammation of the alimentary canal, with redness and softening of the mucous membrane; sometimes perforation of the intestines, with effusion of fluid in the abdomen.

*Treatment.*—Eggs, both yolk and white; milk; metallic iron; avoid acids.



*Tests.*—Polished iron, if introduced in a solution of copper, becomes coated with the latter. A solution of a copper salt, treated by ammonia, gives a bluish white precipitate, which is re-dissolved by an excess of the alkali, forming a blue-coloured liquid.

**ANTIMONY.**—Antimonial vapours prove poisonous. The metal itself is considered inert when introduced into the stomach.

**POTASSIO-TARTRATE OF ANTIMONY—*Tartar Emetic.***—Poisonous doses :—*Horse.* Large doses of this agent may be sustained by the horse. It is best supported if exhibited in quantities that may be repeated. Dupuy, Viborg, and Hertwig, state that 2 ounces are sufficient to kill. Experiments instituted at Alfort show that 4 ounces produced death only on the third day. Eighty grains injected into a vein are poisonous (Bouley). The late Mr Barlow, in company with Mr Dun, performed some interesting experiments on this poison. A brown mare died from the effects of 86 drachms of tartar emetic, taken in six days. Another mare, 16 hands high, took 83 drachms in eighteen days; but without exhibiting any physiological effect. A black mare, of sound, healthy constitution, took 84 drachms, in doses of 4 drachms (repeated twice and thrice a day), during the ten days from the sixteenth to the twenty-fourth of September 1852, and she improved in condition; she was in no way affected by it. 'A healthy, well-bred horse got 10 ounces of tartar emetic in solution, and after showing a good deal of nausea, uneasiness, and pain, died in about six hours. The only notable appearances on post-mortem examination, were softness and vascularity of the intestines, analogous to what is seen in patients that have died while affected by diarrhœa. Neither in this, nor in any of the other cases, were the lungs congested or in-

flamed, as is said to have occurred in Magendie's experiments.'—(DUN, Veterinary Medicines.)

*Cattle* can sustain doses twice as large as those tolerated by horses (Tabourin). Mr Balfour, V. S., Kirkcaldy, informed Mr Dun that he had given half a pound in solution without any very obvious effects.

*Pig*.—A quarter of an ounce was sufficient to destroy an old pig (Hertwig). Forty grains and 80 grains, given in two days, killed a pig five months old.

*Dog*.—If the œsophagus be tied, from 4 to 6 grains will kill. If vomiting can occur, from 2 to 4, or even 8 scruples, can be administered and death not follow.

*Symptoms*.—Vomiting; diarrhœa; vertigo; thirst; salivation; dulness; depression; cold and clammy skin; colic; spasmodic contractions of muscles, convulsions; sometimes paralysis of the hind quarters; and death.

*Post-Mortem Appearances*.—General inflammation of the alimentary canal. Sometimes ulceration, if the tartar emetic has been given in a solid state. Occasionally an eruption on the mucous membrane is observed, similar to that of variola ovina. Lungs congested; blood dark and fluid; ecchymoses in the heart, etc.

*Treatment*.—Vegetable astringents combine with the oxide of antimony to form insoluble compounds, so that tannin, galls, oak bark, Peruvian bark, catechu, and even strong tea, may prove efficacious. If vomiting and purging continue, draughts and enemata containing opium should be given.

*Tests*.—Hydrochloric acid, a white precipitate readily soluble in excess, and reprecipitated, on the subsequent addition of sulphuretted hydrogen, as the orange-red sulphuret of antimony. Metallic zinc and sulphuric acid give a black deposit of metallic antimony, whilst the poisonous gas, antimoniuiretted hydrogen, is given off.

**ZINC—SULPHATE OF ZINC—White Vitriol.**—Three ounces in solution injected in the jugular vein of a horse has often proved fatal. Doses varying from 10 to 50 grains, and introduced into the system in the same way, cause death in the dog.

*Symptoms.*—General disturbance; quick pulse; injection of the mucous membranes; sweats; nausea. In smaller animals there is vomiting, diarrhoea, and the common symptoms of irritant poisons.

*Post-Mortem Appearances.*—Those observed after poisoning by metallic irritants in general.

*Treatment.*—Warm water; milk; albuminous draughts; substances containing tannin, oak bark, etc.

*Tests.*—Ammonia and sulphide of ammonium, a white precipitate. Potash, a white precipitate, soluble in and reprecipitated by sulphuretted hydrogen.

The *Carbonate* and the *Chloride* of Zinc may kill. The first is dissolved with effervescence by dilute sulphuric acid, and the second is detected by the nitrate of silver.

**TIN—CHLORIDE OF TIN.**—Solution of tin used by dyers.

*Symptoms,* as produced by other metallic irritants.

*Treatment.*—Magnesia; albuminous and mucilaginous draughts.

*Tests.*—Hydrochloric acid and sulphuretted hydrogen, a brown precipitate, insoluble in nitric acid. Ammonia, a white precipitate, insoluble in excess. Potash, a white precipitate, soluble in excess. Protochloride of mercury, a grey precipitate.

**SILVER—NITRATE OF SILVER or Lunar Caustic.**—It is a powerful corrosive, and acts immediately after its introduction into the system. Vomited matters darken on exposure to light. There is great pain in the abdomen, purging, etc.

*Treatment.*—Common salt and magnesia.

*Tests.*—Hydrochloric acid, a white precipitate, not soluble in nitric acid, but readily soluble in ammonia. Sulphuretted hydrogen, a black precipitate.

IRON—SULPHATE OF IRON (*Green Vitriol*—Copperas)  
—CHLORIDE OF IRON (*Muriate of Iron*).—Like other irritant poisons, iron acts on the alimentary canal. It induces pain and purging, with coldness of the limbs and surface of the body generally; tympanitis, etc.

*Treatment.*—Magnesia, and the alkaline carbonates; diluents.

*Tests.*—Infusion of galls and hydro-sulphuret of ammonia give a black precipitate; a blue with prussiate of potash; and a red or green precipitate with free alkalies or their carbonates.

BISMUTH and its Salts—all acrid.—Orfila observed fatal effects to occur about twenty-seven hours after the injection of 3 drachms of water, containing scarcely 5 or 6 grains of nitrate of bismuth. Another dog did not suffer from the injection into the jugular vein of the liquor proceeding from 8 grains of crystallized nitrate of bismuth, which had been boiled for six minutes in 2 drachms of distilled water. Two days after, 15 grains of the salt were boiled as above and injected. The animal was immediately attacked with vertiges, he could not move a step without staggering; he looked like an intoxicated person; breathing became difficult; the tongue and mouth were extremely livid, and death occurred eight minutes after the injection. The action of the poison was on the nervous system. Doses of 60 grains, of 1 drachm and 2 scruples, and of  $2\frac{1}{2}$  drachms, proved poisonous to dogs, acting as corrosives on the stomach, and exciting inflammation of the intestine and congestion of the lungs.—(ORFILA on Poisons, vol. i., p. 304.)

*Symptoms.*—Violent pain; plaintive cries; efforts to vomit; trembling; difficult breathing; giddiness; coldness of the surface of the body; awkward gait; death.—(ORFILA.)

*Treatment.*—Mucilaginous drinks. Emetics. No antidote is known.

*Tests.*—Hydrochloric acid and sulphuretted hydrogen, a black precipitate. Water, a white precipitate, not soluble in tartaric acid, and blackened on the addition of sulphuretted hydrogen.

The Salts of NICKEL are acrid and poisonous, as also the Salts of COBALT.

CHROME.—‘CHROMATE OF POTASSA produces deep fistulous sores on the hands of the dyers who use it; and even when applied to wounds in the dog, Gmelin found that it produced a lingering death in six days, with paralysis of the limbs, dyspnoea, and inflammation of the mucous membrane of the air-passages.’—See TRAILL.

*Treatment.*—Emetics; carbonate of magnesia, chalk, and water.

*Tests.*—Its solution is coloured deep red by nitrate of silver; a yellow precipitate is formed with the acetate of lead, and a green with sulphuretted hydrogen.

GOLD dissolved in nitro-muriatic acid is a very poisonous salt. ‘Two grains will kill a dog in two or three days. Injected into a vein, half a grain will kill him in four minutes, after vertigo, dyspnoea, and piercing cries.’

#### *Vegetable Irritants.*

The Vegetable Irritants are numerous, but they all act

very much in the same way, and their acidity usually depends on some oil or resin.

*General Symptoms.*—Severe pain in the abdomen; diarrhoea; in some animals vomiting; tympanitis; the faeces contain fragments, or leaves, or roots of the poisonous plant. Supervening on the state of extreme irritation is excessive weakness, cold sweats, giddiness, the purging continues, and the animal sinks.

*Post-Mortem Appearances.*—Of gastro-enteritis.

*Treatment.*—In some animals emetics must be given. If in the ox there is reason to believe the rumen is loaded with the poisonous agent, it must be emptied by an incision through the left side. Purgatives and enemata are sometimes called for; whereas at others, demulcents and astringents must be prescribed.

**ALOES.**—The extract of aloes, so valuable a purgative in the horse, is not unfrequently administered in strong doses, which may induce very unfavourable symptoms, and even death. Super-purgation carries off a good number of animals treated by inexperienced persons. It is no uncommon thing for a farmer to insist on having 10 drachms of aloes for his horse; and if the true Barbadoes be given, such a dose is attended with much danger. Poisoning by aloes may occur by mistake; and I remember a case which occurred to me several years ago. I had prepared two balls for two horses in adjoining boxes. The one, a 6 drachm ball, was for a cart horse; and the other, about half the size, for a small pony. The pony had the largest dose, and suffered severely. In some diseases, horses can bear but little aloes, such as in influenza, and I have seen several animals literally purged to death.

*Symptoms.*—Diarrhoea, pains in the abdomen; tympanitis; hot and dry mouth; cold ears and extremities; pulse accelerated, thready, and small; violent straining, and

ineffectual efforts to void fæces, the mucous membrane protruding, reddened, through the anus; the fæces are often very offensive, and may be tinged with blood. If some of the salts of iron have been given before the purgative, the excrement is quite black.

*Treatment.*—Demulcents; warm water; clysters; opium.

*Analysis.*—‘Powdered aloes has a snuff-brown colour. When heated, it gives off a thick vapour, having the peculiar odour of this substance; it melts, and burns with a smoky flame, leaving an abundant carbonaceous ash. Strong nitric acid dissolves it, and acquires a rich red-brown colour; sulphuric acid gives with it a yellow-brown colour; a persalt of iron, a deep purple-black. It is soluble in water and alcohol; the solution is slightly acid, and has an intensely bitter persistent taste.’—(TAYLOR.)

**ANEMONE.**—The anemone pulsatilla, or pasque flower of chalky hills; the anemone nemorosa, or wood anemone, with snow-white flowers, in full bloom in April; and the anemone pratensis, have all been looked upon as poisons to the domestic animals. The wood anemone is supposed to be the cause of the enzootic gastro-enteritis known as the ‘darn or blackwater,’ common on woodland pasture. Mr Taylor says, ‘This is a genus of plants comprising several species all possessed of irritating properties in the moist state, but which they appear to lose in great part when dried or exposed to heat, owing to the presence of a volatile principle, *anemonine*.’ Further on, the same author says, ‘No instance is recorded of the plant having destroyed human life; but experiments in animals show that it will act fatally like other irritants, and that it causes most violent inflammation of the alimentary canal. In some instances symptoms indicative of an affection of the nervous system appeared.’

Puihn speaks of the wood anemone as a poison inducing hæmaturia, dysentery, and inflammation of the intestines—(Diss. de Venenis Veget., Erl. 1784, p. 117). This would support the popular view, that the *A. nemorosa* is the cause of 'blackwater' or darn; but I have some doubt of the truth of this, and as I have elsewhere shown, though darn is very abundant on Deeside as far up as the valley of the Fegh, if we travel as far as Balmoral and Braemar, though the plant is quite as abundant, the enzootic hæmaturia and gastro-enteritis is not known.\*

**ARUM MACULATUM.**—An irritant, inducing gastro-enteritis and death in the dog, in from twenty-four to thirty-six hours.—(ORFILA.)

**BRYONY.**—*Bryonia alba*, and *B. dioica*.—Possessed of active cathartic properties. Hertwig has given to horses 2 pounds of the fresh, or from 6 to 8 ounces of the dried root of *bryonia alba*, without observing symptoms of purging; but pains in the abdomen, accelerated breathing, loss of appetite, fever, great dulness, and copious urination. The same symptoms have been known to supervene the exhibition of 2 pounds of the fresh root to a cow. Dogs show symptoms of great dulness from having had half an ounce of the same agent; and without other indications of disorder, they die in the course of twenty-four hours. After death, the alimentary canal is found reddened in various parts, and in others ecchymosed.—(ORFILA.)

**CASTOR SEEDS.**—The embryo and seedcoats of castor seeds contain a very active poison. 'The irritant poison resides in the embryo, and is not expressed with the fixed oil, which is a mild purgative, unless a high temperature be employed, when the oil obtained is observed to possess

\* Highland Society's Transactions, July, 1857.



much more drastic properties.' Captain Pelletier has seen several horses die from eating corn which contained about  $5\frac{1}{2}$  ounces of the seeds. From  $1\frac{1}{2}$  to 3 drachms will destroy a dog, if the œsophagus be tied to prevent vomiting.—(ORFILA.) In carnivorous and omnivorous animals castor seeds are active emetics and cathartics.

**CREASOTE.**—This agent, which has of late years been used considerably in the treatment of the diseases of cattle, is an active caustic or corrosive; and in virtue of these properties, it has been strongly recommended by Gerlach against canker in the foot. One to 2 drachms of creasote, given internally to a dog, induces great anxiety, staring look, debility and even paralysis of the extremities, vertigo, vomiting of a white coagulated substance, bloody foam at the mouth, loud breathing, and symptoms of suffocation, ending in death. On opening the body, a strong odour of creasote (like that of smoked meat) is detected in all the viscera; the mucous membranes of the stomach and intestines are of a dull red colour, and inflamed, in some parts corroded, and the blood is thick and black. The same symptoms have been observed to supervene the above-mentioned dose of creasote mixed with an equal weight of water.

**CROTON SEEDS AND OIL.**—The acrid oil expressed from croton seeds is an energetic poison. One drachm of the bruised seeds will sometimes kill a horse in from five to six days. Two drachms give rise to strong fever, colic, great debility, and in from six to ten or fifteen hours, super-purgation; the pulse not felt at the jaw; cold sweats bedew the body; and death supervenes in from twenty to forty hours: weak animals die even in ten hours. From 10 to 20 grains given to a dog excites violent purgation; and if the œsophagus be tied, even the smaller dose will induce efforts to vomit,

paralysis and death in from four to seven hours. Both in horse and dog, after death the stomach and intestines are found inflamed; sometimes there are erosions of the mucous membrane and effusions of blood in the intestines; in some cases the lungs appear inflamed.\*

A drachm of croton farina, introduced into the cellular tissue of a dog's limb, brought about complete loss of sensation and power to move in twenty-eight hours, and after thirty hours, death.

Mr Morton, in a paper on the purging croton, published in the *Veterinary Record* for 1846, says, that each part of the seed has in its turn been described as the residence of the active acrid principle. Hearing it asserted that the plumula was its seat, so that the rudiments of the future plant might not be preyed upon by insects, while the cotyledons, which preserved them, might even be altogether removed, Mr Morton instituted the following experiment:—‘Sixty grains of croton seeds were decorticated, the testæ and plumulæ carefully separated, and the remaining cotyledons administered in equal proportions to two horses. On the following morning both the horses were labouring under super-purgation, accompanied with much constitutional excitement. The alvine evacuations were profuse, frequent, and watery; the visible mucous membranes highly injected; the extremities and surface of the body cold; the pulse and respiration accelerated; and the prostration of strength extreme. Astringents, combined with sedatives, were immediately had recourse to, and hot fomentations applied to the abdomen, but all in vain: one of the animals died about mid-day, and the other lingered in great agony till the evening. Inspection of the alimentary canal after death, showed the whole of its lining mucous membrane to have been in a state of acute inflammation, the blood-vessels highly turgid, and the large intestines

\* Hertwig. *Arzneimittellehre*, p. 426.

filled with fluid faeces. The cæcum and colon were more particularly involved. *The separated plumula and testæ were afterwards exhibited to a horse without any visible action on the bowels.*

Mr Morton remarks further on, that 'it has been long thought that, in the upper provinces of India, croton seeds are given by the natives to horses for the purpose of poisoning them for the sake of their skins. Mr Hughes, V. S., Calcutta, informed me (Mr Morton) that, with a view to ascertain if this really were the agent administered, he gave to a horse 2 drachms of the bruised seeds, allowing him afterwards as much water as he would drink, and for which a great desire was manifested. Most violent catharsis supervened, which continued for some time, but the animal ultimately recovered. Was not the allowance of the water the reason of this?' Mr James Western, some months after the above appeared in print, wrote to Mr Morton in the following terms:—'In your paper alluded to, you state that Mr Hughes of Calcutta informs you, that he does not consider croton is given in India to horses with a view to cause death. I have had frequent cause to think differently; and I believe it is a generally received opinion amongst veterinary surgeons on this side India, that it is not uncommon in the cavalry. I will give you the history, from recollection, of a case that occurred when I was in the 5th Cavalry, stationed at Jaulnah. A rough rider's troop horse was brought to the hospital at stable-hour in the morning, six A.M., freely purging, and refusing his grain; the nose-bag containing it accompanied him. He died the same afternoon about five o'clock. I had walked over to see him at that time, and found he had just expired. The farrier-major then brought to my notice the fact of two native horsekeepers having been attacked during the day with the same symptoms as the horse, and stated that they had eaten a good deal of the

grain from the bag that the horse refused. They were both removed to the hospital, and had a narrow escape, but both recovered. The remainder of the grain had been thrown away.

‘This was the third horse belonging to this rough rider that had died under similar circumstances while I was with the regiment—all troublesome, vicious beasts, and no doubt got rid of to relieve the man from trouble. Nothing could be proved against him; but proceedings of so searching a nature were instituted, that he did not again repeat the experiment.

‘I think there were here good grounds for supposing croton had been used; for the symptoms were precisely the same in a horse I afterwards destroyed by a double dose, viz. 1 drachm. I have no doubt the nut had been given over night; and a repetition of the dose, to make death certain, was intended for the next morning, and which fell to the share of the horsekeepers.’

Croton oil is an acrid poison, and even from 20 to 30 drops exhibited internally have killed horses. Hertwig says that 8 drops injected into the jugular vein of a horse, and 2 drops in a dog, will cause death. Active purgation ensues in from twenty-six to thirty-six hours if croton oil be rubbed over the skin of the belly in considerable quantities. This effect is produced on the horse by 60 drops, on sheep by 30, and on dogs from 15 to 20 drops. —(HERTWIG.)

We have noticed the castor and the croton seeds and oils, which are drastic and dangerous purgatives, obtained from an order of plants—the Spurgevents or Euphorbiaceæ—characterized as venomous. Dr Lindley says, in his *Vegetable Kingdom*, ‘The poisonous principle resides chiefly in their milky secretion, and is most powerful in proportion as that secretion is abundant. The hairs

of some species are stinging. The bark of various species of croton is aromatic, as *cascarilla*; and the flowers of some, such as *caturus spiciflorus*, give a tone to the stomach. Many of them act on the kidneys, as several species of *phyllanthus*, the leaves of *mercurialis annua*, and the root of *ricinus communis*. Several are asserted by authors to be useful in cases of dropsy; some *phyllanthuses* are *emmenagogue*. The bark of several *crotons*, the wood of *croton tiglium* and common box, the leaves of the latter, of *cicca disticha*, and of several *euphorbias*, are *sudorific*, and used against *syphilis*; the root of various *euphorbias*, the juice of *commia*, *anda*, *mercurialis perennis*, and others, are *emetie*; the leaves of box and *mercurialis*, the juice of *euphorbia*, *commia* and *hura*, the seeds of *ricinus*, *croton tiglium*, etc. etc., are *purgative*. Many are dangerous, even in small doses, and so fatal in some cases, that no practitioner would dare to prescribe them; as, for example, *manchineel*. In fact, there is a gradual and insensible transition, in this order, from mere stimulants to the most dangerous poisons. The latter have usually an *acrid* character; but some of them are also *narcotic*, as those *phyllanthus* the leaves of which are thrown into water to intoxicate fish. Whatever the stimulating principle of *Spurgeworts* may be, it seems to be *volatile*, because application of heat is sufficient to dissipate it. Thus, the starchy root of the *manihot* or *cassava*, which when raw is a violent poison, becomes wholesome, nutritious food when roasted. In the seeds of some the albumen is harmless and eatable, but the embryo itself is *acrid* and dangerous. Many of the species furnish *caoutchouc*, that most innocuous of all substances, produced by the most poisonous of all families; which may be almost said to have given a new arm to surgery, and which has become an indispensable necessary of life. It exists in *Artocarpads* and elsewhere, but is also the produce of species of *Spurgeworts*.

From among the plants mentioned in the above paragraph, we shall specially consider three—*Mercurialis Annua*, *Mercurialis Perennis*, and *Buxus Sempervirens*.

**MERCURIALIS ANNUA.**—Charlot,\* Papin,† Dubois,‡ Schaak,§ have recorded cases of poisoning by this agent. Most of the animals partook of the plant for several days, mixed with other food, before symptoms were shown. These were dulness, loss of appetite, suspended rumination, hot and dry mouth, dry skin, tympanitis, pain in the abdomen, great sensibility of the loins, stiff back, cold extremities, *bloody urine*, diminished secretion of milk, accelerated breathing, small contracted pulse, dilated pupils, and visible mucous membranes red; in some cases, plaintive cries, the mammae become indurated, the teat atrophied, and diarrhoea with very offensive excreta. A pregnant cow was taken in labour.

From delay in treating a cow, an opportunity was afforded Papin of performing a post-mortem examination. He found the paunch full of dry stuff, amongst which the poisonous plant was readily recognised; the epithelium of the rumen was of a blackish colour, soft and easily pulled off; the reticulum contained but little food, and its epithelium was discoloured and readily detached. The greatest change was observed in the omasum or third stomach: it felt hard from without, and was filled with hard, black, dry food; the plant was recognised even here. The mucous membrane of the fourth stomach or abomasum was of a bluish-red hue. The intestine showed signs of inflammation.

The animals were treated by being bled, and demulcent or acidulated injections were passed up the rectum. Cold

\* Recueil de Méd. Véter., 1833, p. 97.      † Ibid., 1834, p. 586.

‡ Journal de Méd. Véter. de Belgique, 1847, p. 17.

§ Journal de Méd. Véter. de Lyon, 1847, p. 277.

ablutions over the back and loins, friction, and short diet, were the other means resorted to with success.

Pigs seem not to suffer from eating of *mercurialis annua* mixed with other food. At Alfort two pigs were thus fed, and they ate it freely, losing flesh, but remaining perfectly healthy.—(*Recueil de Méd. Véter.*, 1846.)

**MERCURIALIS PERENNIS**—Herb Mercury.—Junginger says, that in regions where this plant grows, cattle suffer from hæmaturia.\* Horses will not partake of it. A cat that had eaten of the flesh of an animal poisoned by herb mercury, was salivated and lost its incisor teeth.(?)

**BUXUS SEMPERVIRENS**—Common Box.—The leaves contain a bitter, acrid principle. Camels eat it freely, and soon after die. A horse ate half a pound without sign of disorder; but on having a pound and a half his pulse became accelerated, and the abdomen distended. After death, the intestine was found inflamed.† For the notes on the three last-mentioned poisons, I am indebted to a memoir by Professor Weiss, published in the *Stuttgart Repertorium* for 1851.

**JALAP**.—This drug, the best sort of which is obtained from *exogonium purga*, is an active purgative for dog and cat. Vitet has seen a horse die from the effects of 2 ounces of powdered jalap. The symptoms were of disquietude, heaving at the flanks, and convulsions. After death, the stomach was found distended and partially inflamed. Hertwig has given horses from 3 to 4 ounces, inducing disorder, but not death. White has given 8 ounces to a horse without purging him.

\* *Repertorium der Thierheilkunde*, iv., p. 21.

† Viborg, *Abhandl.* iii., p. 138.

The order of plants—Convolvulaceæ, Bindweeds—to which jalap belongs, is possessed of roots which ‘abound in an acrid milky juice, which is strongly purgative. This quality depends upon a peculiar resin, which is the active principle of jalap, scammony, and others whose roots possess similar qualities.’

**RANUNCULUS.**—Many varieties of ranunculus are irritant poisons. In the *Veterinarian* for 1844, allusion is made to a flock of sheep poisoned by eating the *ranunculus repens*. ‘A flock of sheep had not been many hours in a field into which they had been driven, before the shepherd observed that several of them suddenly fell down as if they had been struck by lightning. Their eyes rolled about in their sockets, their breathing was laborious, and some of them kept turning round and round as if they were dizzy, and died with their heads inclined over their left flanks. He fancied that the seizure was owing to “a coup de sang,” and accordingly bled the animals. The loss of blood, however, seemed to do harm rather than good, for eleven of them speedily died.

‘A veterinary surgeon, who was summoned, immediately detected the cause of the mischief in the great admixture of ranunculi with the grass. He therefore recommended that the bleedings should be discontinued, and a dose of sulphuric ether be given in milk to all the affected animals. Under this treatment the alarming symptoms quickly subsided; and although for a few days some of the sheep remained very feeble and tottering on their legs, the remainder completely recovered.’

Delafond, in his ‘*Traité sur la Maladie de sang des Bêtes Bovines*,’ speaks of the various kinds of ranunculus as being the cause of acute enteritis, which is enzootic amongst cattle in different parts of France. Delafond states that many veterinary surgeons have remarked, that in



fresh pastures where *ranunculus acris*, *repens*, *flammula*, and *sceleratus* abound, acute enteritis is common, and he can confirm their observations. 'They showed me,' says Delafond, 'in the Nièvre and in the valley of Bray, small portions of fields where horned beasts could not pasture without having an active and fatal attack of inflammation of the intestines; and these portions of land were closed in by fences so as to prevent animals encroaching on them.' Daubenton has said that sheep will feed heartily on the *ranunculus bulbosus*. Lipp has seen a flock of sheep poisoned by the corn crowfoot, *ranunculus arvensis*. Half an hour after the animals had been put on the field some began to tremble, and indicated convulsive movements of the eyes and limbs, and died. Almost all the flock had symptoms of vertigo. Immediately after death the abdomen was distended. The stomach was found inflamed in various parts, the liver and spleen black and soft, and ecchymoses beneath the skin and in the flesh. Delafond has seen sheep poisoned by the corn crowfoot; and Brugnone likewise saw seven die from the same cause. Delplanque records an instance, in the *Recueil de Méd. Véter.* for 1855, of five cows losing their appetite, ceasing to ruminate, grinding their teeth, yawning, standing with arched back and staring coat, and having a small quick pulse, reddened visible mucous membrane, and dry mouth. These symptoms, it was found, had been induced by the animals having eaten abundantly of the corn crowfoot. Blood-letting, linseed tea, and clysters restored the animals to health in a few days.

The Marsh Marigold—*Caltha palustris*—one of the crowfoots met with in meadows and wet ditches, contains an acrid principle; but when the plant is young, goats and cattle eat it greedily without danger. The *ranunculus aquatilis* is eaten in large quantities in certain seasons of the year, by pigs and cows, at Ringwood in England, and the

animals thrive on it. *Ranunculus flammula* is said to induce disease of the liver in horses; and Fabregow says that sheep partaking of it die of inflammation of the intestines. *Ranunculus sceleratus* is, perhaps, the most dangerous of all the varieties mentioned.

The stavesacre, one of the Ranunculaceæ, is a vermifuge, caustic, drastic, and emetic. 'The black berries of the baneberry, *actæa spicata*, are poisonous, the roots antispasmodic, expectorant, astringent: they are reported to have afforded very marked relief in cases of catarrh. Similar qualities are assigned to *Botrophis actæoides*, (*Actæa Racemosa*, L.), whose nauseous, astringent bitter roots are regarded, in the United States, as a remedy for the bite of the rattlesnake. Geyer says that the root of a species of *Clematis* is used by the North American Indians as a stimulant to the horses which drop down during their races. The scraped end of the root, held to the nostrils of the fallen horse, instantaneously produces trembling; the animal springs up, and is led to water to refresh its limbs.'—(LINDLEY, *Vegetable Kingdom*, p. 427.)

SAVIN—*Juniperus Sabina*.—The leaves or tops of this plant are usually looked upon as possessed of the properties of a uterine excitant or emmenagogue; but they are stimulating diuretic, owing to an acrid volatile oil, of a light yellow colour and terebinthinate odour, three per cent. by weight of which may be obtained by distillation. Hertwig says that horses are but little affected by large doses of savin. He has observed, as Professor Sick before him, that from 4 to 8 or 12 ounces of the fresh or dried savin, taken twice daily, in food, or made up into balls, and continued for six or eight days, gave rise to no disturbance. Professor Sick continued to give it for half a year with a similar result. Cattle and sheep suffer from large and oft repeated doses, which give rise to tympanitis, associated

with much pain, loss of appetite, irritative fever, constipation, and afterwards bloody diarrhœa. Dogs die of gastro-enteritis from the effects of 4 to 6 drachms of savin introduced into the stomach, and the œsophagus tied to prevent vomiting. Orfila placed 2 drachms of powdered savin on a fresh wound on the limb of a dog: violent inflammation and bloody infiltration of the wounded extremity supervened, and in about thirty-six hours the animal died. Hertwig has repeated this experiment in the dog, and has observed violent inflammation to occur locally, but no constitutional disturbance.

The volatile oil is possessed of very distinct properties, and activates the functions of the body, especially of the skin and kidneys; the blood acquires a scarlet hue, and the excreta possess the peculiar odour of the drug. Pilger says he has seen the hair drop off the skin as one effect of the exhibition of savin; and most persons say that it induces the expulsion of the contents of the uterus in pregnant animals; but Hertwig has noticed neither of these.

In the *Veterinarian* for 1855, at page 401, is recorded the following history by Mr E. Mellet, of Henley-on-Thames:—‘About a fortnight ago, a farmer residing near this town had a misunderstanding with one of his carters, and discharged him; but he continued to live in a cottage adjoining the farmer’s premises. My professional attendance was required a few days since to two mares heavy in foal. One of them passed her foal in my presence, with very little assistance, on Monday evening, and the other on Wednesday last. Both colts were dead; and apparently, from the putrid state in which the membranes were, I should imagine they had been dead, one about ten, and the other about twelve days. This, however, is conjectural. Abortion had evidently been produced by the aid of savin, the smell of which was very strong in the urine and fæces.

For a short time before, there had been observed a rapid falling away of the flesh of the animals; and when called to see them, I noticed that a mucous discharge took place from the anus, which seemed to excoriate the parts over which it passed.

'My treatment, after abortion had taken place, consisted in the administration of the spirits of nitric æther with laudanum, in consequence of the subsequent straining being violent, followed by a gentle aperient; and I am now giving tonics. The mares are both progressing favourably, but are still very weak.'

*Analysis.*—'When the poison has been taken in the form of decoction or infusion, no test can be applied. The fact of poisoning can then only be elucidated by the symptoms, and by circumstantial evidence. If the oil has been taken, it may be separated by distillation, and obtained by agitating the distilled product with one-third of its bulk of ether. It will be remarked from a case reported by Dr Christison, and from that which occurred to Mr Lord, that in spite of great vomiting, the powder remained in the stomach for a period of five days. The contents appear like green pea-soup. That the colour is not owing to bile, may be proved by diluting a portion with water, when the green chlorophylle, from its insolubility, will subside in a dense insoluble stratum; whereas, if the colour were due to altered bile, the whole of the liquid would remain coloured. By washing the green matter in water, and drying it on plates of glass or mica, evidence may be obtained under a good microscope, by the rectilinear course of the fibres and the turpentine cells, that the substance belongs to the fir tribe. The only other poison of the coniferous order is the yew (*Taxus Baccata*); but this differs from savin, in having a lancet-shaped termination to the top of the leaves, while savin has a sharply acuminate point. A portion of the green powder, dried and

well rubbed, will give the peculiar odour of savin. When freed from organic matters, it will yield, by distillation with water, the essential oil of savin.

**'OIL OF SAVIN.**—This oil is of a light yellow colour, and it has a strong terebinthinate odour, sufficiently peculiar to render this an easy means of identification. A greasy stain made by this oil on paper is entirely dissipated by heat, or only a slight trace of resin is left. It is lighter than water, but insoluble in it; giving to it, however, its odour and acid reaction. It forms a milky solution with rectified spirit, but a clear, transparent solution with ether. It is exceedingly soluble in ether; and by this menstruum it may be separated from watery liquids, as the ether floats with it to the top. Nitric acid in the cold slowly gives to the oil a dark red-brown colour.'—(TAYLOR on Poisons, p. 522.)

**RHUS TOXICODENDRON AND RADICANS.**—'The juice of many species of rhus is milky, stains black, and is sometimes, as in *R. toxicodendron* and *radicans*, extremely venomous; being volatile, it is capable of poisoning persons who approach such plants in hot weather, and the same effects are produced by *R. venenata*.'—(LINDLEY.)

**ERICACEÆ.**—*Erica Vulgaris* or *Calluna Vulgaris*, the common heather, is an astringent. According to Gasparin, the *maladie de sologne*, blood disease or red water of sheep, is produced by this plant. I am satisfied that many lambs die of dysentery that are allowed to eat abundantly of common heather.

**RHODODENDRON.**—The Alpine rose.—Two goats, which at four o'clock P.M. had eaten of this plant, became affected about one o'clock next morning with colic, and ejected a quantity of partially digested material by the mouth. The

salivary secretion was very abundant, and from time to time some indications of vertigo supervened. The younger animal died about three o'clock in the morning, and the other a little later. Blood-letting and the exhibition of olive oil were attended with no beneficial result. After death it was found that the rumen was inflamed, and its contents were somewhat thin and liquid; in the reticulum was little food, in the omasum some fluid, and in the fourth stomach the medicine which had been given. The small intestine was of a bluish red colour, the brain injected, and the ventricles contained a red fluid.—(GMELIN.)

**OIL OF TAR, OIL OF TURPENTINE, NAPHTHA,** and others, must be regarded as active irritant poisons. The oil of turpentine, regarded by some Veterinarians as the sovereign of antispasmodics, is a dangerous drug, often aggravating the disease it is intended to cure.

**DECAYED AND DISEASED VEGETABLE MATTER.**—Very apt to give rise to gastro-enteritis or obstinate diarrhœa, with pains in the abdomen, etc. Decayed potatoes will induce severe colic and diarrhœa in the horse.

**MUSTY HAY.**—A wet season, interfering with the proper making and drying of hay, is the sure precursor of many diseases of the digestive organs, and especially of stomach staggers and colic. These effects are, perhaps, more often witnessed on the Continent than in Britain; but throughout Scotland, towards the end of 1856, there was considerable mortality amongst horses from stomach staggers, induced by bad hay. During my sojourn in Lyons in 1855, I had occasion to see a very large number of cases attributed to the same cause. Scarcely a day passed but one or more cart-horses were literally dragged to the

Veterinary School. They moved along with hanging head, sunken eye, depressed lip, and tottering gait, suffering from pain in the abdomen, with considerable tympanitis; partial sweats bedewed the body, the visible mucous membranes were of an intensely yellow colour, and the urine dark. On reaching the loose box, the horse was tied to a centre post, which turned as he moved round; thus keeping him from dashing his head against the wall. The muscles twitched, the horse writhed with pain, and dashed about in fits of delirium. Two hundred and forty-nine cases of this sort were admitted into the Infirmary from August 1854 to August 1855. The disease raged as an epizootic from the month of September 1854, and not only in the neighbourhood of Lyons, but in many departments of France. A large number of animals suffered from colic and skin diseases at the same time, and all referable to the same cause. The stomach staggers which prevailed in Scotland in 1856 was often followed by partial paralysis of the hinder extremities.

The treatment to be pursued in these cases is that of the exhibition of active purgatives, sometimes of stimulants, and mustard to the surface of the body.

Sun-burnt hay and musty oats are apt to excite the action of the kidneys, and diuresis ensues. Large quantities of pale coloured urine are passed, there is great thirst, the appetite is sometimes voracious, but the animal falls off in condition, and may get into a hectic condition, which is rather difficult to overcome. Astringents, creosote, iodide of potassium, and purgatives, usually effect a speedy cure.

**RUSTY STRAW.\***—An interesting little monograph was

\* 'The disease denominated rust, red-rag, red-robin, and red-gum, is caused by a fungus called *Uredo Rubigo*. It forms yellow and brown oval spots and blotches upon the stem, leaf, and chaff. The spores burst through the epidermis, and are dispersed as very

published by Gohier in 1804, entitled *Des Effets des Pailles Rouillées*. Gohier, afterwards director of the Lyons Veterinary School, was then veterinary surgeon to the 20th Light Dragoons. The dépôt of this regiment arrived at Arras on the 7th of June, with about two hundred horses. For about a month they continued healthy, being supplied by good forage; some of the straw, however, was rusty. A few days after the regiment arrived the straw supplied was worse, and several horses fell ill, being mostly attacked by violent colic. In three days fourteen were affected with this disease; but with the exception of two old horses that were ill for three days, the disease was only of a few hours' duration. The horses that partook of most of the rusty straw were most ill. In seven days thirty had suffered, and MM. Gohier and Marigny drew up a report condemning the forage. Their opinion was rejected by veterinary surgeons, and others called upon to inquire into the matter, and the whole evil was attributed to some water, of which, how-

minute grains. The disease is common in corn and in grasses. Mildew is a disease caused by a fungus denominated *Puccinia Graminis*. The ripe spore-cases of this plant are small, dark brown, club-shaped bodies, their thicker end being divided into two chambers, each filled with minute spores, and their lower end tapering into a fine stalk. The sori or clusters of spore-cases burst through the epidermis sometimes in vast numbers. The minute spores seem to enter the plant by the stomata. Some think that they, as well as other minute spores, are absorbed by the roots. The disease attacks wheat. Spring wheat is less liable to this disease than winter wheat, and heavy soils are less subject to it than light ones. Many have supposed that the Barberry is in some way connected with the production of Mildew. 'This idea has been proved to be erroneous by the experiments of Standinger, near Hamburgh, and of Hornemann at Copenhagen. Unger entertains the idea that Blight, Mildew, and Smut are to be considered as exanthematous diseases of plants, caused by the spores of fungi entering the stomata.'—(BALFOUR's *Class-book of Botany*.)



ever, the horses had always drunk whilst enjoying perfect health. After considerable annoyance and litigation, it was recognised that the rusty straw, and even bad hay, had given rise to much disease and death amongst the horses of the regiment. During eight months, out of seven hundred horses, there were constantly from forty-five to fifty in the Infirmary, and in the month of November as many as sixty-two. The deaths were by those diseases which always prevail when animals are badly nourished, viz., stomach staggers, colic, marasmus, glanders and farcy, skin diseases, catarrhal affections, and œdematous swellings. Those horses subject to œdema were very subject to gangrene; and if setons were applied, or a farcy bud cauterized by fire, mortification of the wounded part supervened, and the animals died in few hours. Gohier says, that not only the rusty straw, but likewise the bad hay, was the cause of such serious loss amongst the horses of his regiment.

Gohier instituted several experiments to prove that the diseased straw was so injurious; and not only was he successful with the straw, but a decoction of it induced loss of appetite, the animals became thin and sickly, giving evidence that they had been poisoned.

Several epizootic attacks have been attributed to rust or mildew in plants. Fromment looked upon it as causing great loss amongst sheep in Franconia, during the years 1663, '64, and '65. Rammazzini, Professor of medicine at Padua, speaks of a contagious malady affecting men, cattle, and even the silk-worm, which broke out in 1690, owing to the four or five preceding years having been very hot, and during 1689 and 1690 much rain fell, the country was inundated, the grasses, fruits, and leguminous plants were affected with rust. Plagues which raged amongst animals in Hesse in 1693, in Hungary in 1712, and in Saxony in 1746, occurred simultaneously and as a

result of mildew affecting vegetables. Gerlach has known it to produce abortion and inflammation of the womb in ewes. Numan, Marshand, and Niemann have also written on the noxious properties of plants affected with rust.

**MOULDY BREAD.**—Two kinds of mould have been described—the very noxious red or orange coloured (*penicillium roseum*), and the less poisonous greenish blue (*penicillium glaucum*). ‘Accurate researches have shown that inferior descriptions of flour are very prone to undergo these changes when they are kept in a damp place. When the bread is first baked it appears good and wholesome; but the crumb contains the sporules of the mould not destroyed by the heat of baking, and these only require favourable conditions (humidity) for their development. The corn of one season may be particularly prone to this change, from the weather having been unfavourable to its growth. M. Gauffier de Claubry found the corn grown in France, in 1841, to undergo this noxious conversion readily (*penicillium roseum*), in the state of flour or bread; but it was not so with that grown in 1842. The season of 1841 was remarkably wet for the harvest.’—See Taylor on Poisons.

Horses have been known to die of gastro-enteritis from having eaten mouldy bread. Fuchs saw two cases of stomach staggers induced by it; purgatives relieved the animals. Several authors have written on the poisonous effects of mouldy bread, including Kuers, in his *Diätetik*, Berlin, 1839, 1 bd., p. 66 ff.; Sproegel, *Experimenta circa varia venena*, etc., Göttingen, 1753; Gohier, *Observations et expériences sur le pain moisi et sur quelques poisons min. et végét.*, Paris et Lyon, 1807.

**ERGOT.\***—This is a disease found in all grasses, but

\* ‘Ergot is a monstrous state of the grain, in which the en-

chiefly in rye—hence ergot of rye—*secale cornutum*, and maize. The ergot of rye abounds in many countries; and the Abbé Tessier first visited Sologne to study its effects on the health of the people, and to perform experiments with it in animals. Ergot of rye, highly prized as a uterine excitant or emmenagogue, if eaten regularly, is a horrible poison, and causes mortification of the limbs. The ergot of maize is, according to Roulin, very common in Columbia; and the use of it is attended with a shedding of the hair, and even the teeth, of both man and beast. Mules fed on it lose their hoofs, and fowls lay eggs without shell. Its action upon the uterus is as powerful as that of rye ergot,

larged and diseased ovary protrudes in a curved form, resembling a cock's spur; hence the name from the French—ergot, meaning a spur. The ovary is black externally, spongy internally, and contains much oily matter. Some consider it as produced by the attack of a fungus, which induces a diseased condition in the ovarian cells. The disease is usually met with in rye, and the name of spurred rye is applied to it. It sometimes occurs in wheat and in barley; and it has also been noticed in *Lolium perenne* and *Lolium arvense*, *Festuca pratensis*, *Phleum pratense*, *Dactylis glomerata*, *Anthoxanthum odoratum*, *Phalaris arundinacea* and *Alopecurus agrestis*. Ergot consists of a very dense tissue formed by polygonal cells, united intimately with one another, and filled with an oily fluid. It is developed in the unimpregnated ovule of rye; for although extremely dilated by the entophyte, and rendered difficult of recognition, the integuments of the ovule increase without completely losing the form which they would have assumed if they had grown into a true grain, imitating in this respect the ovaries of wheat, in which *Tilletia Caries* (Bunt) has replaced the seed. The solid mass, which has been called *Sclerotium Clavus* by De Candolle, and the filamentous portion, called *Sphacelia* by Leveillé and Fee, and *Ergotætia* by Queckett, are only, properly speaking, organs of vegetation. The fungus destined to grow from this apparatus is an elegant *Sphæria*, probably that called by Fries *Cordyliceus purpurea*. This plant has been seen by Schumacher in diseased cereal grains, and it has been detected by Roussel in *Sclerotium Clavus* growing on

or perhaps more so. The country name of the maize thus affected is Maispeladero. This statement, however, requires confirmation.—(LINDLEY.)

The condition induced when an animal partakes of ergot for some time is termed Ergotism. One large dose induces in man and animals dryness and irritation of the throat, salivation, thirst, burning pain in the stomach, vomiting, colic, and sometimes diarrhœa. Cerebral symptoms, such as headache, giddiness, and stupor, are also met with (Taylor). The chronic effects have been observed by Tessier on birds and pigs; by M. Bonjean on birds and dogs; by Parola on solipedes; and by Descote on ruminants. The first effect is to produce loss of appetite and stupefaction; when it begins to act, dogs howl frightfully until they are completely under its influence, and then lie down and groan. The most usual symptoms are dull, stupid expression, staring look, dilated pupils, vertigo, signs of inebriation, coma; tremors, convulsive twitchings, tetanic spasms, especially of hind limbs, and the latter soon become feeble and paralysed; the animal can scarcely stand upright, moves slowly and with difficulty; there is general debility and loss of flesh; pulse slow and weak; skin cold; coat staring. The extremities, ears, horns, and tail, have lost their natural temperature; there is a sero-mucous or sometimes bloody discharge from the nose; the limbs are œdematous; black

*Bromus sylvaticus*, and *Arundo calamagrostis*, and by Dumeril in ergot of rye. Tulasne has shown that this cordyliceps is produced from the ergot when it is allowed to vegetate. Ergot of grasses and ergot of cyperaceæ, according to Tulasne, do not belong to the same vegetable species. Rye affected with this disease, when used as bread, is very prejudicial. The Abbé Tessier showed that ergot caused gangrene on animals fed on it; and many instances are recorded of gangrene of the extremities occurring in persons who had lived on diseased rye. Ergot is said to prevail in rye grown on wet and stiff lands.'—*Balfour's Class-Book of Botany*.

spots, livid patches, and gangrenous sores form on the surface of the body; dry gangrene of beak and tongue of birds, of the ears, tail, and the phalanges of the limbs, and these parts separate slowly and without pain from the living tissue adjoining.\*

When in Lyons I saw a case of ergotism in man. Both hands were black and dead, with a distinct mark of separation above the wrist. They were amputated by M. Valette.

The *post-mortem appearances* in cases of poisoning by ergot are of more or less irritation of the alimentary canal; the viscera are flaccid and softened; the muscles semi-gelatinous; the blood fluid, and interior of the heart and blood-vessels ecchymosed and red as in putrid disorders.

M. Bonjean has compared the action of the ergot of rye on animals to that of morphine, although it contains no trace of that substance. M. Bonjean has determined by numerous experiments, 1st, That the ergot gathered on the first day of its formation has not the poisonous properties which it has when taken on the sixth day; 2d, That a heat of 212° Fahr. produces the same effect as gathering it too early; and 3d, That fermentation deprives it of its properties. These circumstances serve to explain the want of success which sometimes attends its administration. M. Bonjean has discovered in it two active principles—1st, The oil of ergot, of a uniform consistence—a yellow colour, an acrid flavour, and possessing poisonous properties in a high degree; 2d, The aqueous extract obtained by treating ergot with water, either deprived of its oil or not, of a brown colour, a thick consistence, and a musty smell. It is soluble in water, and can be formed into mixtures, syrups, pills, etc. It pos-

\* See Tabourin, Matière Médicale.

sesses decided hæmostatic properties. It exerts a specific influence on the uterus, occasioning a contraction of that organ.

*Animal Irritants.*

The most remarkable of the animal irritants, and the first we shall consider, is the Spanish fly.

**CANTHARIDES—Blistering Fly.**—The poisonous doses are half an ounce and upwards for horse or ox, a drachm for sheep, and half a drachm for a dog.

*Symptoms.*—The mouth and fauces, and indeed the whole of the alimentary canal, being excessively irritated or inflamed, the buccal membrane is red, and there is considerable difficulty in swallowing. Dogs vomit, and efforts of a similar nature are made by horse and ruminants. The genito-urinary organs are very much affected; sometimes there is diuresis, at others strangury; the testes are drawn up close to the inguinal canal. In all animals there appears to be a certain degree of sexual excitement. The urine is voided with difficulty and pain, as it is irritating and burning; it is highly albuminous; the fæces are covered with mucus and mixed with blood. At first the animals appear excited, and soon prostration of strength supervenes; cold sweats bedew the body; there are muscular twitchings; paralysis of the hind quarters; and death.

*Post-Mortem Appearances.*—The intestinal tube and genito-urinary apparatus are congested or inflamed. The kidneys may sometimes appear perfectly healthy, but the lining membrane of the bladder is always reddened. There are ecchymoses and even spots of ulceration in the intestine.

*Treatment.*—Mucilaginous and albuminous draughts.

Linseed tea, a strong emulsion of gum-arabic, white of eggs, are all very useful. Carnivorous animals should be excited to vomit. Emollient clysters are of great service. Oleaginous draughts are to be avoided, as oil dissolves the cantharidine, and favours its absorption.

*Analysis.*—Cantharidine, the active principle of the blistering fly, is a white crystallizable fatty body, insoluble in water, and extracted from the insect by ether or alcohol. Water takes up cantharidine with other principles, so that an infusion of cantharides is poisonous. Cantharidine is volatile when strongly heated, and the vapour attacks the eyes in a very painful manner. The vesicating power is the only safe means of identifying cantharides. The powder of cantharides may be detected by reflected light, some shining points of a beautiful golden green colour are observed. M. Poumet recommends that the suspected liquids, mixed with alcohol, should be spread on sheets of glass, and allowed to evaporate spontaneously to dryness. The shining scales will then be seen, on examining, by reflected light, either one or both surfaces of the glass.—(See Taylor, p. 546.)

**SAUSAGE POISON—Poisonous Souse.**—Many opinions have been emitted, and experiments performed, to demonstrate the nature of a formidable poison which is developed in the brine into which meat and fish are steeped. This agent is an active poison for all the domestic animals. In some parts souse is used as a medicine for horses by quacks; and Spinola has related a case of sixteen pigs dying from poisoned brine being mingled with their food. The symptoms presented were of vertigo and apoplexy and after death the brain was found congested, and the brain and spinal cord inflamed. Souse is slightly acid, and, according to Clement, its composition is as follows :—

Water,	.	.	.	.	74.400
Chloride of sodium,	.	.	.	.	22.780
Acid lactate of ammonia,	.	.	.	.	0.648
Albuminous matter in solution,	.	.	.	.	0.820
Undetermined animal matter,	}	.	.	.	1.352
Sulphate of potash,		.	.	.	
Phosphate of lime,		.	.	.	
					<hr/> 100.000

The *symptoms* which it produces in the pig are general uneasiness; the animal alternately rises and lies down, pricks his ears, extends his head, and is seized with twitchings of the muscles of the head, neck, and back; the jaws are subject to involuntary movements, and there is foaming at the mouth. These paroxysms last several minutes, and are followed by periods of intermission. These periods become shorter and shorter, until permanent tetanic spasms exhaust the animal. A strong dose of the poison generally destroys life in eight hours.

The *post-mortem appearances* are usually of congestion of the lungs; irritation of the stomach, the contents of which have a peculiar odour of rancid fat. The cerebellum and medulla oblongata seem the most affected, and the membrane covering them is injected, and may be the seat of extravasations of blood. Between the pia-mater and the brain there is sometimes an accumulation of reddish fluid. —(ALBERT, *Mag für die ges. Thierheilkunde*, 1851.

M. Reynal, of the Alfort school, published some experiments in the *Paris Veterinary Journal* for 1855; and he came to the conclusion, that souse was only poisonous three or four months after its preparation; that about  $3\frac{1}{2}$  pints were required to kill a horse; a pint and a half for a pig; about 7 ounces for a dog: much smaller doses induce vomiting in dog and pig. The use of this substance for



some time, mingled with food, though in small quantity, may be attended with fatal results.

Albert has noticed that it is that portion of the souse exposed to the air which becomes poisonous ; and a French Veterinarian, Plasse, who is a great advocate for the theory, that all epidemics and epizootics are the result of the development of cryptogama in food, etc., believes the souse to be poisoned by fungi growing on the exposed surface of brine into which any animal substance is steeped. There is still some mystery respecting the nature of this poison ; and we cannot admit entirely the opinion of M. Fuchs or Gonbaux, who regard souse as poisonous because it is a solution of common salt,—the latter, in certain doses, being a poison.\*

*Treatment.*—M. Reynal recommends blood-letting ; decoctions of linseed ; nitre ; acidulated draughts ; cold applications to the head ; mustard poultices to the surface of the body.

**TRAIN OIL.**—Mr Taylor says, ‘I am not aware that this oil has acted as an irritant on man, but it has caused the death of cattle within a quarter of an hour, producing intense suffering, and foaming at the mouth. After death

\* After the publication of M. Reynal's Memoir on Souse, in the *Paris Veterinary Journal* for May 1855, M. Gonbaux performed experiments to show that the poisonous properties which had been studied were simply those of common salt ; and in administering poisonous doses of the latter, as the action of vomiting interfered with the results, M. Gonbaux adopted Orfila's method of ligature of the œsophagus. Reynal had not done this, and with M. Bonley instituted a series of experiments, afterwards confirmed by Jobert, which proved that ligature of the œsophagus does of itself induce symptoms of vomiting and prostration, which are of course more intense if any emetic substance has been swallowed. Death results unless the œsophagus is set free, or the passage is by some other method restored.

the intestines were found inflamed. The oil was not pure train oil, but a mixture of naphtha and fish oil.'—(*Pharm. Journal*, April 1845.

#### ANIMAL POISONS—CONTAGIOUS DISEASES.

Under this head we include all poisons developed in the animal system, in communicable disorders. Their number is limited, and their true nature unknown; but they are exceedingly active, and often induce complicated and fatal maladies. Some would appear to be volatile and others fixed; they are absorbed by the cutaneous or mucous surfaces, or introduced into the blood by inoculation, to exert their specific influence in the production of disease. Each poison of this class is developed in one particular constitutional state, and is capable of inducing a similar systemic condition and no other. All animals are not affected by one poison, and in some instances, as with the contagious element of the typhoid plague of cattle, only animals of one species are affected. Occasionally animal products acquire irritant properties of a non-specific nature, and act as local irritants when brought in contact with living tissues, and considerable doubts exist regarding their constitutional effects, just as we are at a loss to explain their primary mode of development. Human obstetricians as well as veterinary surgeons, have had to notice cases in which the secretions from the mucous surface of the genital organs, in protracted labour, gave rise to erysipelatous inflammations and pustular eruptions on the hands and arms of those assisting at the birth. It may be stated that, in this instance, the specific poison of puerperal fever of woman or of the parturient fever of animals, is developed and discharged with the mucous secretion of the vagina; but I should be inclined to classify this irritant discharge with others proceeding from inflamed or irritated mucous

membranes, such as from the bronchia, and which do not appear to owe their origin to a specific constitutional fever. It is well known that in animals the worst forms of parturient fever occur when the birth has been quick and easy, and, therefore, not as the result of a poison developed in the system during a process of exhaustion, which has been compared to that of the overdriven ox, whose flesh becomes indigestible and irritating to the gastric mucous membrane.

Of the specific animal poisons we know more or less about eight—1st, The anthrax or carbuncular poison; 2d, The variolous poison; 3d, Poison of panzootic aphtha; 4th, The virus of farcy and glanders; 5th, The poison of rabies; 6th, The syphilitic; 7th, The contagious element of a peculiar eruptive disease of the genital organs of stallions and mares; 8th, The fixed and volatile poison of contagious typhoid—*rinderpest*—in cattle.

As it is beyond the object of this work to give a history of the various forms of disease, produced by the inoculation of, or contamination by, the different animal poisons, I shall only briefly allude to their nature and effects. As regards treatment to be adopted in the separate maladies, we may refer the reader to the therapeutical synopsis.

### 1. *Anthrax Poison.*

The terms carbuncular and anthracoid, as applied to a whole class of diseases, signify the condition of the blood—black as a coal—and of the tissues that speedily lose their vital properties, and are liable to decomposition even before the animal's death. The chief forms of anthracoid disease have been classified under three heads—1stly, The anthrax fevers without local manifestations; 2dly, Those associated with erysipelatous swellings and gangrene of

tissues in various parts of the body ; 3dly, Those in which boils, pustules, or malignant carbuncles are developed on the surface of the body.

Under the first head we include, *a.* a malignant fever of the horse, observed more especially in warm climates, bearing a close analogy to typhus ; this is probably the Loo-dianah disease of India—See *Veterinarian* for 1854, page 504 : *b.* the carbuncular apoplexy of cattle and sheep, also called *splenic apoplexy*, *blood-stroke disease*, and by the French, *maladie de sang*, *sang de rate*, etc. This last affection was for long looked upon as a gangrene of the spleen, *milzbrand*.

Of the anthrax fevers with erysipelatous swellings we have, *a.* the black quarter or quarter evil of young cattle ; *b.* the gangrenous erysipelas of pig and—braxy—of sheep ; *c.* anthracoid angina or carbuncular cynanche of pigs ; *d.* hæmorrhoidal anthrax ; *e.* erysipelatous swelling and gangrene of the tail in cattle.

Under the third head is, *a.* the malignant pustule of animals, as developed in man after inoculation with the poison developed in all the forms of carbuncular diseases of domestic quadrupeds ; *b.* the glossanthrax of cattle and pigs ; *c.* lastly, the malignant boil of the throat of the pig, called *soie* or *pique* by French veterinary authors.

As our knowledge of the above diseases will become more exact, the various forms may be found to differ in some essential features ; and as a poison is developed in the animal system in every instance of what we now call anthracoid disease, several poisons, and not one only, may be discovered to exist. A mild form of such a poison is, perhaps, the cause of various pustular eruptions of the skin in man and animals, and may be the active element in the spread of boils and carbuncles in the human race. The anthrax poison is most readily developed in herbivorous and omnivorous quadrupeds, and spreads from them to all

warm-blooded animals, and even to fishes and other cold-blooded creatures.

### 2. *Variolous Poison.*

Variola or pox occurs in a peculiar form in different animals. It is typical and most malignant in man; the sheep-pox is very analogous to human small-pox; the cow-pox, a much more mild affection, is similar, but perhaps not identical with the form of pox affecting man and sheep; the horse and dog would almost appear not to suffer from any form of this disease peculiar to themselves, though some authorities would regard strangles and distemper as modifications of variola, and associated with the development of strangle and distemper poisons which, however, are of very doubtful existence. The pig, goat, and domestic fowls appear as exempt as horse or dog. The virus which accumulates in the vesicle or pustule on the skin of any animal subject to variola, is capable of exciting a similar eruption, or, at least, constitutional disturbance in almost any warm-blooded animal.

### 3. *Aphthous Poison.*

Epizootic, or rather, panzootic aphtha, communicable to all animals over extensive tracts of land is an eruptive disease, called by some English veterinarians, eczema epizootica, chiefly affecting cattle and pigs, more rarely sheep and goats, but attacking all warm-blooded animals, including game, and not sparing man. Aphthæ form in the mouth, on the hairless parts of the skin of cattle, and round the upper part of the feet between hair and hoof. It is especially from the vesicles on the teats that the poison may escape and mix with the milk, which, if drunk warm, induces inflammation of the fauces, irritation of the

alimentary canal, and even eruptions on the skin. Hertwig proved this by experiment on himself and two medical friends; but I have known of calves and pigs dying by being thus poisoned. It must be especially dangerous when epizootic aphtha is raging in the dairies, as it does so frequently, and the warm milk is given to young children.

#### 4. *The Virus of Farcy and Glanders.*

*Farcy.*—*Malleus s. morbus farcimosus, chachexia lymphatica farcimiosa*, is a disease which originates spontaneously only in the horse and allied species; the lymphatic system is chiefly affected, the superficial lymphatics inflame, and along their course inflammatory tumours form, called farcy buds, which suppurate, and indolent ulcers result from the opening of the abscesses; these constantly yield an ichorous discharge containing a poison capable of producing in other animals, not alone in the single-hoofed quadruped, either farcy or glanders, or both.

*Glanders.*—*Malleus s. morbus equi humidus (Vegetius), coryza virulenta, ozæna maligna contagiosa, morbus lymphaticus contagiosus cum ozænis*, developing spontaneously in the equine tribe, is an affection met with in both acute and chronic forms—almost invariably acute in the ass and mule. Farcy and glanders are two forms of the same morbid state; in the one instance the morbid lesions are superficial and cutaneous, in the latter the respiratory passages and lungs are chiefly involved. The virus of farcy or glanders inoculated in man almost invariably induce acute glanders and farcy combined, proving speedily fatal.

Farcy or glander poison is not volatile, only recognised as existing in the ichor discharged by the ulcers on the skin and mucous membranes, or accumulating in the pul-

monic abscesses which follow inoculation of such pus or ichor. The latter is alkaline, highly charged with solid elements, consisting of albumen, carbonate of soda, chloride of sodium, phosphate of lime and mucus. The microscopic elements of all specimens I have examined are pus and granular corpuscles in large quantities. The virus has been ascertained to exist in the blood, as transfusion of the latter, from a glandered to a sound horse, communicated the disease. According to Viborg, it exists in the saliva, in the urine, and in the perspiration, when the latter flows abundantly under the influence of heat, exertion, etc. It may adhere to any cold substance, dry and preserve for months; when moistened again and introduced in the blood of a healthy animal, farcy or glanders may result. It is carried from animal to animal, by any conceivable means of transfer, adhering to living or dead objects, and taking effect when applied to excoriated surfaces, and under rare circumstances, when brought in contact with a mucous membrane capable of absorbing rapidly, such as the conjunctiva. The action of the gastric juice destroys it as much as heat and strong chemical reagents.

##### 5. *Poison of Rabies.*

Several species of the genus canis, and even the cat, would appear susceptible of spontaneous attacks of rabies—usually qualified as rabies canina. It is an excessively dangerous and contagious disease, occasionally observed amongst dogs as an epizootic; but whenever existing in man and other warm-blooded animals, it may be traced to inoculation from bites of rabid carnivora. The symptoms of the disease indicate at all times great disturbance of the sensorial and instinctive faculties. Great derangement of the nervous functions, are peculiar in animals of different

species. The saliva of rabid animals contains the poison, the real nature of which is unknown.

Various have been the causes mentioned which induce rabies in the dog. That certain breeds are specially predisposed to it, appears erroneous. It has rarely been seen amongst fox-hounds, well-kept and protected as these animals are, but frequently in every other variety of dog because not so strictly attended to, and exposed in a thousand ways to contagion. It has been said, wrongly I believe, that it may supervene on distemper, mange, and sudden suppression of the secretion of milk in cats. Climate has been said to exert a great influence on the distribution of the disease. Excessive heat and excessive cold are not productive of the disease; it is most frequent in the temperate parts of Europe, and far less common in the torrid zone and polar regions. The countries that are most free of it are Kamschatka, Greenland, and even Sweden and Denmark. Amongst the hot countries we have the tropical regions of Asia, of Africa, and America. As the disease is transmissible, so may it be imported into countries usually favoured with exemption; and, as Boudin says, this may explain how Prosper Alpin, and Larrey, who declared that rabies did not exist in Egypt, might have been as right in their assertion as Pruner, who has recently seen the malady in that country. This may likewise explain how the disease which was rare, if ever it occurred, in Algeria has become common there since the French invasion. According to Ulloa, rabies was once unknown in South America; and, according to Stevenson, Smith and others, the affection first visited Peru in 1803, and Lima in 1807. We are assured that it was imported in the Mauritius by an English vessel from Bengal. In 1852, according to Schrader, the disease spread with great intensity on the right and left banks of the Elbe, the islands on the river being spared.



The saliva of the rabid dog preserves its poisonous properties about twenty-four hours after the death of the animal; but Count Salm has experimented on the dried foam from the mouth, and has been successful in communicating the disease. On 59 dogs inoculated by Hertwig, 14 became rabid, viz., 23.7 per cent. According to Faber, out of 144 dogs bitten by rabid ones, 77 or 53.3 per cent. became affected with the malady. Hertwig has known a dog resist every attempt to communicate the disease to him, having been repeatedly bitten by mad dogs which had inoculated others in the same way. I have known of one case of individual immunity manifested by a pointer dog which Professor Rey kept for a long while in the Lyons veterinary school, causing him repeatedly to be bitten by dogs undoubtedly rabid without any effect. This must clearly be ascribed to idiosyncrasy, which is quite as remarkable in persons resisting contamination by syphilitic poison. From the decennial period of 1827 to 1837, of 224 dogs taken to the Alfort veterinary school, after having been bitten by dogs that were rabid or supposed to be so, and kept in the infirmary for upwards of two months to ascertain their real condition, 74, that is to say nearly a third, became rabid, 130 not having suffered. But as M. Renault says, these numbers cannot indicate the activity of the poison of rabies, for it was not always certain that rabies existed in the dogs that first bit; that the bites were not carefully searched for and detected in those animals taken to the school, so that many might have escaped unhurt; and, lastly, they might have been bitten in parts thickly covered with hair, so that the saliva could not penetrate to the wound. From 1830 to 1831, at different times and under different circumstances, M. Renault caused several animals, both carnivorous and herbivorous, to be bitten on parts only slightly covered with hair; occasionally M. Renault procured some saliva from rabid

dogs during the severe paroxysms, and inoculated other animals. Some were both bitten and inoculated. Sixty-seven out of the number became rabid, of the other 32 none suffered, that is to say, three-fourths became affected, and the other fourth, though not subjected to treatment, escaped free. At Lyons, it has been found that of the animals bitten accidentally, one-fifth of dogs and one-fourth of horses took the disease. The results of experiments were similar to those obtained at Alfort. At Toulouse, according to Lafosse, out of 16 animals—dogs, cattle, and horses—5 only, viz., less than a third became affected. In Berlin, out of 137 dogs bitten about the town and taken to the college, from 1823 to 1837, only 16 became rabid; and out of 25 dogs which Hertwig caused to be bitten, 10 suffered. Thus at Berlin the number of cases following bites and accidental inoculation, have proved fewer than in Alfort, Lyons, and Toulouse. It is generally admitted, that the bites of wolves are more frequently followed by rabies than the bites of dogs. Out of 254 persons reported as having been bitten by wolves, 164 died of hydrophobia. It is supposed that this depends on the fact, that the wolf in biting, aims at the face, neck, and head.—See Boudin, *Géographie Médicale*, vol. ii., p. 678.

#### 6. Syphilitic Poison.

Syphilis has been held by many as a disease peculiar to man, but others have considered certain eruptive affections of the genital organs of animals, as syphilitic. That this is the case would appear more than doubtful; nevertheless, Auzias Turenne has positively demonstrated that, from man to animals, and *vice versa*, syphilis may be communicated. 'Almost unanimously,' says Sperino, 'were medical men admitting, till lately, the non-transmissibility of syphilitic diseases to brutes.' The unsuccessful inoculations of

Hunter, of Turnbull, of Ricord, of Castlenau, had consolidated this ancient belief. Towards the close of 1844, M. Auzias Turenne read a memoir before the Academy of Sciences in Paris, in which it was announced that he had succeeded to communicate, by inoculation, syphilitic ulcers to the monkey, the cat, rabbit, and dog. These experiments have been repeated, and their results confirmed. Professor Sigmund of Vienna obtained positive results from inoculation of the virus in all warm-blooded animals; and in the dog, the rabbit, and horse, the primary symptoms were followed by a cutaneous syphilide. Wetz, Diday, and others, have proved that from the syphilitic ulcers developed as the results of inoculation of animals, syphilis may be communicated to man.

#### 7. *Virus of Eruptive Disease of Stallions.*

A benignant and a malignant eruptive affection of the organs of generation in the horse have been described. They are essentially distinct diseases. Both exanthematous affections; the benignant one has been termed aphtha or phlyctenoid eruption of the genitals; whereas the malignant form, very indefinitely named, because obscure in its real nature, is termed *chancre plague*, *malignant disease of stallions*, *maladie du coit*, by the French; *beschäl-krankheit* (stallion's disease) of the Germans. The last has been looked upon as identical with syphilis by Daumas, Delafond, and others; some veterinarians have considered the contaminating poison as similar to that of farcy and glanders. It would appear distinct and sui generis.—See *The Veterinarian*, 1856, p. 89, 145.

#### 8. *Poison of Contagious Typhoid in Cattle.*

Many diseases reputed contagious, spread from a com-

bination of influences, often quite independently of the operation of a specific virus or contagious element. Yellow fever, cholera, typhus, and pleuropneumonia of cattle, are to be included in this category. There is one disease of the ox tribe, however, of spontaneous origin in the Russian Steppes, where it more or less constantly creates ravages, which only extends westward over the Continent of Europe in the lines of communication between different countries; the contagious element may be carried by oxen, by people, merchandise, hides, horns or hoofs, and even pigs, dogs, and cats that have approached or perhaps eaten portions of the diseased carcasses. This cattle plague, *rinderpest*, *löserdurre*, *typhus contagiosus boum*, etc., is an essentially contagious pestilential fever of a typhous type peculiar to the ox, not even affecting the nearest allied ruminants, such as the buffalo and yak. It is peculiarly malignant, and characterised by intestinal lesions analogous to the lesions of typhoid or enteric fever of man; hence, I prefer the name contagious typhoid, to contagious typhus.

We only speak of contagious typhoid here with reference to the *materies morbi* developed and capable of inducing the disease in healthy animals. This element may be carried over to a limited space through the atmosphere, and may contaminate water, so that it is not safe to allow healthy animals to drink from buckets or pails from which diseased oxen have drank. When an animal is affected, according to Barrach, there is an area of 20 to 300 yards around, within which animals cannot be brought without great danger of infection. It pervades every part of the diseased animal, the blood, bile, mucus, and all the excrements. Not only are the flesh and viscera impregnated, but if these be steeped in water the water becomes poisoned. The *materies morbi* is not easily destroyed. The disease may occur by placing oxen in stables which have been empty for more than a year, after diseased ones had died

in them. A general outbreak has occurred from exhuming carcases that had been buried for nineteen years; the remnants of the skeleton and less readily decomposed portions of the animal contain the poisonous principle, to spread disorder and death amongst cattle. The chemical and organic characters of the poison are unknown. It is destroyed by chlorine, chloride of lime, nitric acid, and other powerful disinfectants.

**POISON OF VENOMOUS SERPENTS.**—The only venomous serpent found in Britain is the common viper. A single bite is sufficient to kill a dog, but a horse or ox can resist three or four attacks. Fontana has estimated that 12 grains of the poison were necessary to kill an ox. The poison of all serpents acts in a similar manner, varying in different species in the intensity of symptoms, and the rapidity with which death follows the bite.

*Symptoms.*—Great pain in the wounded region, swelling; nausea, vomiting; signs of syncope, convulsions; small and frequent pulse; cold sweats; inability to rise; tetanus, and death.

*Post-Mortem Appearances.*—Nothing peculiar has ever been observed, and the tissues swell round the wound, which is often gangrenous.

*Treatment.*—The wound must be sucked, and the parts around scarified with cupping-glasses; amputation when practicable; the application of caustics, of a solution of ammonia; a ligature to be applied above the wound when possible. Internally, wine, ammonia, and other excitants may tend to rouse the poisoned animal.

**POISON OF VENOMOUS INSECTS.**—The scorpion of the East and West Indies is the only insect whose sting is worth notice. Its poison is not fatal to large animals, but induces severe pain and swelling of the limbs.

*Treatment.*—The wound must be sucked, and liquor ammonia and oil rubbed on the part.

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### NARCOTIC POISONS.

DEVOID of acrid or irritating properties. Narcotics stupefy, acting as direct stimulants, and inducing the torpid, dull, or stupid condition, by a peculiar over stimulation of the brain. Dr Wood of Pennsylvania, considers narcotics as cerebral stimulants, which are agents, having a stimulant influence over the circulation and nervous system generally, with a peculiar power over the special functions of the brain, as evinced, in their higher grades of action, by delirium and stupor. These cerebral stimulants differ very much in the degree of their general stimulant power; in the degree in which they relatively affect different organs or functions; in the manner in which they affect precisely the part or organ upon which they operate; and, lastly, 'there is, for the most part, in each one of them, a characteristic mode of affecting some function apart from their general action as cerebral stimulants. Thus, opium produces constipation of the bowels, hyoscyamus often acts as a laxative, and belladonna occasions a characteristic dryness and irritation of the fauces.'

Dr Wood\* says, that when poisonous quantities of narcotics have been taken, death occurs in one of two ways. Either a nervous centre essential to life, as the respiratory centre in the medulla oblongata, is so far overwhelmed by the active congestion, as to be unable longer to perform its

\* A Treatise on Therapeutics and Pharmacology. By George B. Wood, M.D., etc. Philadelphia, 1856, page 643.

office, in which case, the function of respiration ceases as a necessary consequence; or, the general depression following the enormous preceding excitement of the cerebral centres generally and of the whole system, is too great for reaction, and the patient dies completely prostrated.

. . . 'Death then, from the cerebral stimulants, is usually an example of asphyxia (apnoea, J. G.). The heart, as in the same affection from other causes, continues to beat for a short time after respiration has ceased, sometimes in a greater or less degree for five minutes, thus affording the opportunity for the employment of recuperative measures, even after apparent death. Brodie first found, by experiments on the lower animals, that, after apparent death from a narcotic poison, life might be saved by artificial respiration.'

**PAPAVERACEÆ**, the poppy order possessed of narcotic properties.—The seed is universally oily, and in no degree narcotic. The oil from the seeds of *papaver somniferum*, is found to be perfectly wholesome, and is, in fact, consumed on the Continent in considerable quantity. Poppy oil-cake is used as food for cattle. Poppy heads, or the dried ripe capsules of the poppy, are narcotic; but the domestic animals have suffered most frequently from eating the petals of the red or corn poppy.

**PAPAVER RHŒAS**.—The recent petals of the red or corn poppy have a peculiar heavy odour of opium; their action is similar to that of the latter substance, but slight. On the domestic animals they induce symptoms similar to those of epilepsy or madness.

Professor Weiss has collected much information on this subject, and from his paper, frequently quoted in this work, we extract the following:—'Grimm\* observed that cattle

\* *Repert. der Thierheil*, v., p. 112.

having eaten much of the red poppy, had a weak, awkward gait, uttered a groan at every step, were affected with diarrhoea, and remained in a stupid, sleepy condition. Schmager\* and Lichte† witnessed trembling, foaming at the mouth, loss of consciousness and sensibility, rolling of the eyes, loud bellowing, restlessness amounting even to raving, tympanitis, shining and twitching movements of the eyes, fixed and widely dilated pupil, agitated pulse, the secretion of milk is stopped. According to Gaullet,‡ the secretion of milk was watery, without fat or caseous matter, and diminished in quantity; pulse small and quick; skin dry, staring coat; grinding of teeth; the animals flew, as if rabid, on the people that approached them, and bit themselves in the legs. There was constipation; the fæces dry and tinged with blood. As the symptoms of raving and roaring subsided, the animals became dull, stupid, and sleepy, sometimes they lay down, at others they stood, but every now and then the signs of furor supervened. In one case the cattle got loose, ran madly up the village, and struck their heads against the walls and posts. The mad stage lasted for about two hours; the animals fell like dead, but awoke again after several hours. The food taken by these animals was examined by an apothecary, who found it to consist of three-fourths of the corn poppy, ripe and unripe seed capsules; *adonis autumnalis* (pheasant's eye); *delphinium* (larkspur); and the remaining fourth was clover.'

In the larger number of cases the symptoms are not so violent. As a general rule the animals are restored to health in the course of from six to twelve hours. Occasionally the animals get worse; cows could scarcely

\* Landw. Wochenbl. für das Grossherzogth. Baden, 1838. No. 35.

† Magazin für Thierheilkunde, iv., 520.

‡ Recueil de Méd. Véter., 1829, 99.



walk three or four days after taking the poison, and the symptoms lasted until the sixth and seventh days, when convulsions and diarrhoea supervened, and Gaullet saw six animals die.

*Post-Mortem Appearances.*—Gaullet had only one opportunity of inspecting an animal after death. In the rumen and reticulum, the contents were hard, floating in an alkaline fluid; the epithelium was readily stripped. The abdomen was distended, and contained hard food; fluid material existed in the fourth stomach. The small intestines were inflamed, and adhering together in various parts by plastic lymph. The kidneys were large and inflamed.

*Treatment.*—Grimm prescribes decoction of linseed, wormwood, and gentian, with 4 ounces of sulphate of soda; the abdomen is well rubbed with oil of turpentine and camphorated spirit. Schmager recommends vinegar, oil, and strong coffee alternately; under this treatment the animal recovered in from four to twelve hours. Lichte advises cold affusions, large doses of neutral salts and clysters; the symptoms disappeared in the course of twelve hours.

**OPPIUM**—The inspissated juice of the poppy capsule.—Its narcotic properties are due to the morphia, with many other alkaloids, in very variable quantities, combined with sulphuric acid and a peculiar organic acid, the meconic.

*Poisonous Doses.*—From 1 to 2 ounces prove poisonous to the horse. Cattle sustain much larger quantities. A pig or dog may die from the effects of 2 drachms, or of 8 to 10 grains injected into the jugular vein. Large quantities of opium may be supported if an animal be made to take it constantly.

*Symptoms.*—At first an animal is restless; the eyes look bright, there is a vague expression, the pupils fixed; the belly tympanitic; there is twitching of the ears and tail, determination of blood to the skin; warmth of the extre-

mities, until perspiration breaks out in parts, or over all the cutaneous surface; the breathing is accelerated, pulse quick and full; the bladder is emptied, and the sexual organs in an excited state. In from half to two hours a state of somnolence, with unsteady gait, and symptoms of vertigo, ensue; the pupils are dilated; the conjunctiva of a purplish colour, and the state of stupor and unconsciousness increases; convulsions and tremors succeed, with partial paralysis of body, relaxation of the sphincters; involuntary discharge of urine and fæces; cold sweats; and death.

*Post-Mortem Appearances.*—The digestive organs are more or less full of hard and dry material; the mucous membrane is apt to be in a congested state. The blood in the vessels is dark coloured; the whole of the organs, but especially the heart and nervous centres, are full of blood. There are often ecchymoses on the serous membranes.

*Treatment.*—The smaller animals must be made to vomit. The vegetable astringents recommended by Orfila are comparatively useless. Coffee, nux vomica, and the salts of strychnia have been recommended. Bleeding has been proposed to relieve the nervous centres of blood. Stimulants in moderate quantities are useful. Cold ablution, ammonia, etc. Artificial respiration.

*Tests.*—The peculiar odour of opium forms a good preliminary test of its presence, though too much reliance cannot be placed on the positive or negative character of this test. The strictly chemical detection of opium is confined to the separation and recognition of its two principal constituents, morphia and meconic acid. The best process for separating these ingredients from pure opium, or from opium or laudanum mixed with organic matter, is to reduce the material to a state of fine division, add a little acetic acid, and as much distilled water as is required to make a somewhat thin fluid, then heat gently for two hours,

and filter through (1) muslin, and (2) paper. The extract is treated with solution of acetate of lead till precipitation ceases, heated to near ebullition, and filtered. The morphia, as acetate of morphia, will be present in the liquid or filtrate A, and the meconic acid, as meconate of lead, is left on the filter B.

A. The acetate of morphia solution is treated with a stream of sulphuretted hydrogen, to precipitate the excess of lead, heated and filtered from the black sulphide of lead; the filtrate is evaporated gently to the consistence of a syrup, and the extract is acted upon by alcohol, which dissolves out the acetate of morphia. The alcoholic solution is evaporated to dryness, a little water added, and the liquid tested as follows :—

*Tests for Morphia.*

(1.) *Nitric acid* an orange-red colour, which passes quickly to a yellow tint.

(2.) *Perchloride of iron* or *persulphate of iron* (nearly neutral), an inky blue colour.

(3.) *Iodic acid*, separation of iodine with a brown colour, and distinct odour of iodine. The iodine may be further detected by adding a solution of starch, when the blue iodide of starch is formed.

B. The precipitate of meconate of lead is washed into a vessel containing water; and while suspended in the liquid, a stream of sulphuretted hydrogen passed through till the formation of the black sulphide of lead ceases. The mixture is heated, filtered, and the filtrate evaporated to small bulk, and refiltered. This liquid, containing the meconate of water, is then examined as follows :—

*Test for Meconic Acid.*

*Perchloride of iron*, a deep red solution, insoluble in bichloride of mercury, which distinguishes it from a similarly coloured solution formed by the action of perchloride of iron on a soluble sulphocyanide.

**HYDROCYANIC ACID**—Prussic acid.—Undiluted, 10 drops were attended with death in ten seconds, when given to two horses; a drop on the conjunctiva or buccal membrane will kill a dog in about three seconds. Two ounces of Scheele's acid, which contains  $4\frac{1}{2}$  per cent. anhydrous hydrocyanic acid, will kill a horse; but as Mr Morton says, it is surprising what large doses, when gradually increased, this animal will bear. The vapour of prussic acid is very deadly, and a high temperature favours its volatilization.

*Symptoms.*—If fifteen or twenty minutes elapse before death ensues, the symptoms are of uneasiness; giddiness; stupor; quick pulse; difficult breathing; palpitation of the heart; and loss of power. Convulsions, tetanic attacks, with dilated pupils, and insensibility, precede a period of complete collapse, and death. In carnivorous animals there is usually vomiting; abundant alvine dejections; salivation; and paralysis, first of the hind quarters, and nextly of the thoracic extremities.

*Post-Mortem Appearances.*—The body is subject to considerable cadaveric rigidity; the jaws are closed, and there is foam at the mouth; the alimentary canal is sometimes found in a healthy state. In many experiments on dogs the gastric mucous membrane has been observed injected and red. The head and large vessels are full of dark fluid blood, and the lungs appear soaked in the same liquid. The nervous centres are much injected.

*Treatment.*—Venesection has been recommended for

plethoric animals. Cold ablutions to head, neck, and vertebral column. Applications of ammonia to the nostrils. Chancel saved the life of a cow by exhibiting the protosulphate of iron. Orfila preferred chlorinated water in the form of draught or enema.

*Tests.*—(1.) *Nitrate of silver*, a white precipitate, not soluble in cold nitric acid, but soluble in excess of ammonia.

(2.) *Perchloride of iron*, *protosulphate of iron*, a little *caustic potash*, and, finally, an excess of *hydrochloric acid* (all added to the same solution), give rise to Prussian blue.

(3.) *Yellow sulphide of ammonium* added in very small quantity, the mixture evaporated to dryness, gives on the addition of *perchloride of iron* a deep red colour, which is readily rendered colourless by *bichloride of mercury*.

*Analysis.*—When hydrocyanic acid has been taken or administered as a poison, it may be generally recognised at once by its characteristic odour. The separation of the acid from organic matter may be readily accomplished by placing the material in a retort, thereafter adding a little dilute sulphuric acid and distilling, the first portions of water which pass over contain the prussic acid in a state of purity sufficient for applying the tests.

*Prussic acid* combined with alkalies forms poisonous compounds.

The cyanides of potassium and iron are poisonous like prussic acid. Bitter almonds, laurel oil, laurel water, and cherry laurel water owe their poisonous properties to this acid.

**HYOSCYAMUS NIGER**—Henbane.—*Poisonous doses.*—One ounce of the tincture is deadly to horse or ox. Sheep are but little affected by it. Two ounces of the decoction of the roots killed a small but robust dog in a few hours. Two drachms of the extract were attended with a similar result, and 30 grains of it injected into the

jugular vein killed in a short time. The whole plant is poisonous, but especially the roots, which resemble parsnips for which they have been mistaken, with fatal results. The fresh herb is said to be eaten with impunity by horses, cows, sheep, goats, and hogs, while birds and dogs are affected like man.

*Symptoms.*—Crouzel has published a case of poisoning by henbane in a cow ; the animal fell to the ground ; was subject to irregular movements, to dilatation of pupils, feebleness of the hind quarters, foaming at the mouth, purging, etc. In dogs there is delirium, vertigo, efforts to vomit, plaintive cries, deep and difficult breathing, and stupor.

*Post-Mortem Appearances.*—Congestion of the lungs and nervous centres. No sign of inflammation.

*Treatment.*—Emetics in carnivora. In ruminants it is recommended to void the rumen by an opening in the flank. Bleeding and acidulated draughts have proved of service.

*Analysis.*—‘ The poisonous properties of hyoscyamus are known to be owing to a crystalline body which is called hyoscyamia. It is very difficult of extraction. The crystals have a silky lustre, they are not very soluble in water, but easily dissolved by alcohol and ether. It has an alkaline reaction, and its solution is precipitated by tannin. It has an acrid, disagreeable taste, resembling that of tobacco. It is highly poisonous, and causes dilatation of the pupils. When the vegetable has been eaten, it can be identified only by its botanical characters. The seeds are very small and hard, they are honey-combed on the surface, and may easily be confounded with those of belladonna.’—(TAYLOR.)

**LACTUCA.**—The lettuces are all narcotic. *Lactuca virosa*, *scariola*, and *sylvestris* yield an extract resembling opium in its qualities. The garden lettuce, *L. Sativa*,

furnishes the narcotic drug called lactucarium. But according to Aubergier, the best lactucarium is obtained from *lactuca altissima*.

**SOLANUM.**—‘There are two species of this plant,—the *Solanum dulcamara*, *bitter-sweet* or *woody nightshade*, which has a purple flower and bears red berries; and the *Solanum nigrum*, or *garden nightshade*, with a white flower and black berries. Dunal gave to dogs 4 ounces of the aqueous extract, and in another experiment, 180 ripe berries of the *Dulcamara*, without any ill effects resulting. On the other hand, Floyer states that thirty of the berries killed a dog in three hours.—(WIBMER, *op. cit.* *Solanum*.) These differences may perhaps be reconciled by supposing that the active principle, *solania*, on which the poisonous properties of both species depend, varies in proportion at different seasons of the year.’—(TAYLOR.)

**CAMPHOR.**—*Poisonous doses.*—Two drachms of camphor injected into the jugular vein, or 2 ounces introduced into the stomach, kill a horse. According to Dupuy, an ounce and a half proved fatal in two cases. Hertwig considers the deadly dose for a dog to be from a quarter to half an ounce.

*Symptoms.*—General excitement; injection of the mucous membranes; muscular twitchings, vertigo, profuse sweats; the odour of camphor is emitted by the nostrils and the secretions of the body; the animal falls to the ground with outspread nostrils and dilated pupils, and foaming at the mouth. The smaller animals often appear affected with paraplegia; there is loss of sensibility. Often in animals there are symptoms of apoplexy, with loss of motion and sensation, and death ensues without convulsions.

*Post-Mortem Appearances.*—Although classed with nar-

cotic poisons, nevertheless camphor often produces irritation of the alimentary canal. The blood is dark and coagulated in the heart and larger vessels. The sinuses of the dura-mater, especially about the medulla oblongata, cerebellum, and pons Varolii, are gorged with blood. The body exhales a strong odour of camphor, which is perceptible even after the flesh has been boiled.

*Treatment.*—Acidulated draughts and purgatives. If the dose does not prove fatal, diuretics help to expel the drug by the kidneys. In the smaller animals, emetics must be given.

**ALCOHOL.**—Eight ounces of pure alcohol are sufficient to kill a horse; 16 ounces of commercial alcohol induce intoxication, but not death. One or 2 ounces of pure alcohol injected into the jugular vein of a horse may prove fatal. Cattle can sustain higher doses than the solidungula. Dogs are easily affected by alcohol. From 1 to 2 ounces of it soon kill.

*Symptoms.*—At first there is great constitutional excitement, with irregular movements; bright eyes, but haggard look; pupils contracted; colicky pains, convulsions. During the second stage, viz., that of stupor, there is nausea and vomiting in those animals that can perform this act; loss of sensibility; the pulse is small and feeble, breathing deep and slow; the skin is covered with perspiration, and the animal falls to the ground in a comatose state, to rally in the course of a few hours if the dose has not been too large.

*Post-Mortem Appearances.*—Irritation of the digestive organs; congestion of the nervous centres, and of the lungs, etc.

*Treatment.*—Cold ablutions; friction; ammonia; emetics in some animals; bleeding with caution, to overcome the cerebral congestion.



**ETHER AND CHLOROFORM.**—Exhibited internally in large doses, these agents produce intoxication and death. If animals are made to inhale them, they become giddy, insensible to pain, lose the power of motion, and fall into a profound sleep with complete muscular relaxation. Large quantities of ether or chloroform may thus be given, if diluted with air; but if the reprehensible practice be followed out of applying a sponge or rag saturated with chloroform over the nostrils, preventing the access of atmospheric air to the lungs, the animals make violent efforts, as in cases of drowning, and die of apnoea.

The effects of chloroform on animals and man are precisely similar. An over-dose of it by long-continued inhalation induces paralysis of the respiratory nervous centre, hence of the lungs, and secondarily of the heart. But even a small dose may kill owing to an extraordinary influence on the nervous system, or on the heart itself. As Dr Wood remarks, the patient dies almost as if his heart had been paralyzed by a stroke of lightning. My experience does not tally with Mr Dun's, that chloroform cannot be used so conveniently and safely in the lower animals as in man, though I admit that, in horses, its anæsthetic action is sometimes preceded by considerable excitement; and if, to prevent this, it be given rapidly and in large amount, it may prove fatal.

After death by inhalations, the signs are of congestion of the nervous centres and respiratory organs, with flaccidity of heart. The blood in the circulatory system is always fluid and dark.

*Treatment.*—Dashing cold water over the head and body generally; stimulants applied to the nostrils; artificial respiration; galvanism.

## NARCOTICO-IRRITANT POISONS.

SUBSTANCES belonging to this class exert a narcotizing influence over the cerebral functions ; but at the same time have a direct action on the spinal centre, and induce tetanic spasms, convulsions, and paralysis. They may induce active inflammation of the digestive system, but are not corrosive, and generally require to be taken or given in large doses, which is often precluded from the strong taste most of them possess.

The action of most of the narcotico-irritants depends on peculiar alkaloids, which are commonly recognised by tests. It is, however, important in suspected cases to examine carefully the stomach and intestine, and determine the botanical and microscopic characters of any part of the vegetable contents supposed to be poisonous.

In treating such cases of poisoning, the stomach and intestines must be emptied as soon as possible. In cattle the rumen may be cut into, and the mass of contained poison abstracted by the hand. In the horse we have to trust to the tardy effects of purgatives and clysters. In the dog, pig, and cat, recourse may be had to emetics. Stimulants and cold ablution have been recommended in man ; also tannin as a precipitant, and black tea or strong coffee when tannin is not at hand.

**COCCULUS INDICUS.**—Picrotoxine, a most venomous principle, resides in the seed of *Anamirta paniculata*, well known in commerce under the name of *Cocculus Indicus* ; and the, no less formidable, alkaloid principle menispermine has been obtained from the pericarp of the same fruit. 'From the facts collected by Wibmer, neither *Cocculus Indicus* nor picrotoxine, which forms 1-100th of the kernel,

appear to be possessed of very active properties upon large animals. Orfila gave 3·38 grains of picrotoxine to a good-sized dog ; it produced frequent vomiting, but the animal soon recovered.'—(TAYLOR.)

**DARNEL GRASS.**—Speaking of Grasses in general, Lindley says, 'None are unwholesome in their natural state with the exception of *Lolium temulentum*—darnel grass—a common weed in many parts of England, the effects of which are undoubtedly deleterious, although perhaps exaggerated ; of *Bromus purgans* and *catharticus*, said to be emetic and purgative ; of *Bromus mollis*, reported to be unwholesome ; and of *Festuca quadridentata*, which is said to be poisonous in Quito, where it is called Pignonil. To these must be added *Molinia varia*, injurious to cattle, according to Endlicher ; and a variety of *Paspalum scrobiculatum*, called Hureek in India, which is perhaps the Ghohna grass, a reputed Indian poisonous species, said to render the milk of cows that graze upon it narcotic and drastic. It is, however, uncertain how far the injurious action of some of these may be owing to mechanical causes, which, in the case of the species of *Calamagrostis* and *Stipa*, seem to be the cause of mischief in consequence of their roughness and bristles. In their qualities the poisonous species seem to approach the properties of putrid wheat, which is known to be dangerous.'

According to Rivière, the poisonous effects of the darnel are due to an acrid resin, which amounts to three-fifths of the ground seed. The plant grows abundantly in wet seasons, and in the green state is quite harmless, but the ripe seed is dangerous. According to Burkhard, the straw has proved deadly to calves. The poisonous properties of the *Lolium* have been contested by some, and Weiss suggests that this might arise from the properties of the plant varying in different localities ; and the active

principle is without doubt volatile, so that old, dried, or roasted seeds are almost, if not quite, inert.

In man the seeds have produced heat, with pain in the stomach, nausea, vomiting, and diarrhoea, followed by languor, loss of vision, ringing in the ears and vertigo, without proving fatal, though taken in a somewhat large dose. Mr Tait of Melrose has recorded the following in *The Veterinarian* for 1842, at page 212:—"I was requested by a gentleman in this town to look at three pigs that were taken suddenly ill. Before my arrival one of them had died. The other two were lying foaming at the mouth, with convulsive twitching over their bodies, and they also appeared to be dying. I lifted one up, when it immediately commenced running round about and against any thing that happened to be in its way, or, meeting with an unyielding object it stood thrusting its head against it; the other would not stand at all. We gave them some purgative medicine, but without any effect, for they soon died. I made inquiry of the man who fed them. He said that he had given them some dressings of barley a few hours before I saw them, in which was a great quantity of "sturdy" (*Lolium temulentum*). On opening them, their stomachs and intestines were found to be highly inflamed. The lungs also were sadly congested. It is often remarked by old people that they were formerly in the habit of mixing the *lolium* with malt, when brewing beer, as its intoxicating nature is very great; hence, I suppose, its name "sturdy."

In 1831 Meyer\* observed horses, after having eaten of the seeds of this plant, to gather their feet under their body, foam at the mouth, have an anxious expression, irregular and quickened breathing, tucked up appearance of the abdomen, pulse slow, from 25-28 beats in the minute, viscid-saliva in the mouth, disturbed temperature of the

\* Archiv. der Schw. Thierärzte, 1831, p. 163.

body, listlessness, uncertain, feeble gait. The condition lasted for about three days and three nights. A case is related by Seeger,\* which occurred in Switzerland in 1341. A horse had eaten such a quantity of the seeds of *Lolium*, and was so stupified and affected, that he was taken for dead and removed from the village. He awoke and returned to his stable, much to his owner's astonishment.

In olden times the darnel grass was the supposed cause of periodic ophthalmia, or moon blindness. Seeger has experimented on dogs to ascertain the effects of *Lolium*. Brosche has observed them in sheep, and has noticed the giddy and staggering symptoms; and after death no lesion of the alimentary canal, but inflammatory spots on the upper and right side of the brain, and on the right side of the medulla oblongata a table-spoonful of clear liquid. Rafn has found the *Lolium* not injurious for fowls. Bauhin, Hertwig, Nestler, and others, investigated the subject of the poisonous properties of darnel grass; and Hertwig has fed sheep, horses, and hens with it for whole weeks, without seeing any ill effects from it. This is confirmed by Professor Nestler's experiments on horses and cows. Nestler says, 'that we are quite certain of 100,000 cases in which the eating of *Lolium temulentum* has been unattended with mischief to one in which untoward symptoms were manifested.'

FOXGLOVE.—The leaves and seeds of *Digitalis purpurea* possess active properties; the leaves only are officinal. The purple foxglove is a beautiful biennial or perennial hedge plant, indigenous in Europe, growing abundantly in the south of England. As a medicine digitalis has been much extolled, from a marked and peculiar influence it exerts over the heart's action. It is capable of irritating the

\* Seeger, Diss. de lolio temul. Præa. Camerario Tübingen, 1710.

alimentary canal, is sedative to the nervous centres, and through them affects the heart, as proved by the experiment of division of the parvagum, which prevents the digitalis inducing any effect on the central organ of circulation.

According to Delafond, the poisonous dose of digitalis for the horse is from  $1\frac{1}{2}$  to 2 ounces; Bouley and Reynal consider half an ounce, and Hertwig 6 drachms, as sufficient to induce symptoms of poisoning. Half an ounce may excite gastro-enteritis. Cattle suffer from larger doses; and dogs die from the effects of from 2 to 3 ounces of the drug, if the œsophagus be tied. Six to eight hours after the exhibition of a poisonous dose of digitalis, there is dulness, loss of appetite, staring coat, injected visible mucous membranes, staring prominent eyes, dilated nostrils, breathing and pulse accelerated; in the course of twelve hours, symptoms of gastro-intestinal irritation, with nausea, colicky pains, purging, and in some animals vomiting, supervene. In about twenty-four hours the nervous centres are affected with symptoms of coma, fixed and haggard look, dilated pupils, feeble condition of the hind quarters, skin and extremities cold, great muscular relaxation and debility, and death. The characteristic symptoms of poisoning by digitalis consist in violent action of the heart, with abnormal sounds; pulse feeble and indistinct; apparent mucous membranes of a violet colour; respiration accelerated, then becoming slow, irregular, interrupted; rapid emaciation of body; at first deficient urinary secretion, spasmodic efforts of the bladder, and lastly, copious micturition.—(See TABOURIN, *Matière Médicale*, p. 399.)

The *Post-Mortem Appearances* consist in marks of inflammation of the stomach and bowels; black uneoagulable blood; pale flabby heart, with ecchymoses outside and within.

Digitalis accumulates in the system, and for some time

without obvious effect ; but it may begin abruptly to act with great energy, as if with the accumulated power of all that may have been taken, and symptoms of poisoning become manifest.

In the treatment of cases of poisoning by digitalis, substances should be used containing tannin, as this renders the *digitalia* insoluble and inert. When there is much prostration, the system must be supported by stimulants until the poison is eliminated.

**DIGITALIA.**—The active principle of digitalis, procured by a very complex process, in the shape of a white, inodorous, intensely bitter, and imperfectly crystalline substance. There is no known test for it. One-sixteenth of a grain of digitalia is said to be equal in strength to about 18 grains of the well prepared powder of the leaves.

**HELLEBORE.**—*White Hellebore*—**VERATRUM ALBUM.**—Waldinger has said that 2 ounces of white hellebore root may be given to the horse, inducing alvine evacuations, but not purging, much salivation, and efforts to vomit ; Rytz, on the other hand, declares that 1 ounce will purge, and excite a fatal gastro-intestinal inflammation. I have repeatedly observed the poisonous effects of the tincture of white hellebore injected into the veins ; from half to one ounce thus introduced into the system proves speedily fatal. The poisonous dose for the sheep is from a quarter to half an ounce. Dogs will sustain large doses introduced into the stomach, as the substance is immediately expelled by vomiting. If the œsophagus be tied, death occurs in a very short time from the exhibition of a few scruples, and a like result follows the injection of from 15 to 30 drops of the tincture into the jugular vein.

*Symptoms.*—The injection into the jugular vein of a horse of a decoction of white hellebore root, consist-

ing in about 2 scruples of the substance to 1 ounce of water, induced, in one instance that I observed, general disquietude in about four minutes. These gradually passed off; and on injecting a similar dose half an hour afterwards, violent emetic efforts supervened, the abdominal muscles were violently contracted, at the same time the muscle of the neck became spasmodically rigid; apparent signs of choking or of constriction of the pharynx, the mouth being convulsively opened. There was frequent deglutition of pharyngeal fluid, the breathing became laboured, and pulse accelerated. The emetic action subsided, and the animal was left in a state of extreme prostration, with cold surface of body, and cold sweat in the inguinal region. Phrenic contractions continued at intervals, indicated by marked and unmistakeable hiccough. All symptoms abated, and on the next day the horse was destroyed by the injection of 3 drachms of the tincture of white hellebore, presenting symptoms of extreme prostration, vomiting, etc.

In the dog the symptoms are sometimes of sudden cessation, apparently, of respiratory and cardiac movements; but almost immediately the most violent efforts to vomit are observed, with singultus, enormous flow of secretion from the mouth, spasm of the throat, copious discharge of urine, giddiness, convulsions, stupor, staggering and moaning, insensibility, and death.

*Analysis.*—‘Powdered white hellebore root has a reddish brown colour, resembling jalap. Nitric acid gives to it a red, rapidly passing to a dark brown, colour. Sulphuric acid produces with it a dark brown tint, almost black; iodine water, a bluish-grey tint, slowly brought out. The proto and persalts of iron have no effect upon it.’—(TAYLOR.)

White hellebore owes its properties to an alkaloid veratria, which is a brownish-white uncrystalline powder,



scarcely soluble in water, even on boiling, but it is more readily dissolved by alcohol and ether. It is a powerful poison, possessing a hot, acrid taste, without bitterness.

*Tests.*—The salts of veratria in solution are recognised by a flocculent white precipitate, formed with *potassa*, *ammonia*, and the *simple carbonates of the alkalies*. If veratria is treated with concentrated *sulphuric acid*, it agglutinates at first into small resinous lumps; but these dissolve with great readiness to a pale yellow fluid, the colour of which gradually increases in depth and intensity, and changes afterwards to a reddish yellow, then to an intense blood red, subsequently to crimson, and finally to violet. *Sulphocyanide of potassium* produces only in concentrated solutions of salts of veratria flocculent gelatinous precipitates. Additions of chlorine water to the solution of a salt of veratria imparts to the fluid a yellowish tint, which, upon addition of ammonia, changes to a faint brownish colour. —(FRESENIUS.)

*Black Hellebore*—HELLEBORUS NIGER.—*Christmas Rose*, *Brankursine* of Lancashire, *Bear's foot*, *Setter-wort* or *Helleboraster*.—Not quite so active as the white hellebore; the leaves, but especially the roots, are poisonous. Of the latter, 1 ounce, according to Hertwig, suffices to kill a horse; from 2 to 3 ounces prove invariably fatal; the same result follows the injections into the veins of a horse of a drachm of the substance in decoction. The doses for the ox are the same; 15 grains injected in the veins induce vomiting and nervous symptoms. Sheep die from the effects of 1 to 3 drachms taken internally. Dogs readily evacuate the stomach of the poison; but when the oesophagus is tied, from 1 to 2 drachms will kill. The powder is absorbed from a wound with fatal effects.

*Symptoms.*—The recent root is violently acrid, and, applied to the skin, induces inflammation and vesication. In-

ternally it is a drastic hydragogue cathartic, inducing vomiting, colicky pains, cramps, convulsions, and death. Black hellebore has also been ranked amongst the emmenagogues as a uterine excitant; but its action is very unequal, sometimes operating on the brain, though it is not so stupefying as *Veratrum album*.

Hellebore contains an acrid *volatile* oil, and a peculiar white, crystallizable, bitter principle, *helleborin*.

The foetid hellebore, or bear's foot, has been made the subject of comment by Mr Mayer of Newcastle-under-Lyne.\* He says, 'The hellebores have been employed in veterinary medicine for destroying worms, for which purpose the leaves of the *Helleborus foetidus* have been administered.' . . . 'In respect to the deleterious effects of the leaves of the stinking hellebore as an anthelmintic, a case came under my observation a short time ago, where a gentleman, from his horse not carrying condition, gave it three half pints of the leaves chopped small, and after being digested in some water, mingled in a bran mash. This the animal took the first night without any perceptible inconvenience; the owner, therefore, on the second night, administered similarly two half pints. The following morning they found the animal very ill from violent inflammation of the mucous membranes of the bowels, accompanied with constant and violent tenesmus, and a constant discharge of frothy mucus; but there was no effort to vomit, the effects of the agent being more concentrated upon the large intestines. We did not see the horse till eleven o'clock A.M., when we found the vital powers fast sinking, and he died shortly after.'

'I consider,' continues Mr Mayer, 'the use of hellebore root for pegging calves and cows as often fraught with danger, where animals are of bad habit of body, from its tendency to produce erysipelas and gangrenous inflammation.'

\* See Veterinarian, 1847, p. 5.

**HEMLOCK.**—This is the product of *CONIUM MACULATUM*, but several plants are popularly included under the name.

The extract of the leaves and roots of the **COMMON** or **SPOTTED HEMLOCK** have been found by Dr Christison to produce paralysis of the voluntary muscles, with occasional slight convulsions; then paralysis of the respiratory muscles; and lastly, death from apnoea, the heart continuing to contract long after respiration had ceased: sensation did not seem to have been impaired. Opposed to these results are the observations of Mr Judd, who found that in cats doses even not large enough to be poisonous caused great languor and drowsiness, and often profound sleep for two or three hours; the muscular excitability being lessened, and the circulation and general temperature reduced. After death, the appearances are general venous congestion, fluid state of blood, and softening of brain.

In the *Veterinarian* for 1845, Mr Read has spoken of lambs poisoned by eating the *Conium maculatum*. They became giddy, listless, could not move about, struggled, and died. On opening the rumen, Mr Read was struck with the beautiful green colour and peculiar odour of the contents. The hemlock thickly covered a boggy spot in the field where a number of sheep were feeding. Only three died; the rest were saved by bleeding, and a solution of sulphate of magnesia, acidulated with sulphuric acid, was given to each.

On the 10th of May 1841, Mr Holford of Northwich was called to attend a stock of dairy cows that had been turned out the previous day on a marshy piece of ground, surrounded by a brook; the latter must have overflowed during heavy rains; the ground was covered with coarse grass of all kinds, and much of the common hemlock. On entering the cow-house, of those that appeared to be worse Mr Holford found three seemingly lifeless; but, on a close examination, he with difficulty found the pulse, of an extremely

feeble character, beating but little more than half so rapidly as when in health. The extremities were deathly cold, but respiration not much altered. The eyes were closed; and on elevating the lids the pupils were much dilated, and the retina unaffected by light. All the animals were comatose, the bowels inactive, the skin cold, and hair standing erect. These were the symptoms of three; but, during the day, twenty-one more of the stock exhibited similar appearances in a milder form. One cow that was bled by the owner died; the others were kept up by stimulants every hour, evidently rallying after each dose; and if the medicine was discontinued, they sank into a state of lethargy. During two hours of the night stimulants were administered eight times, and perspiration at length broke out on the skin, the extremities became warm, the countenance lively, the bowels responded, and in a week or two the animals regained their original strength. Lecoq saved a cow by bleeding, and giving 12 ounces of acetate of ammonia in water, in two doses. Noll saw two goats poisoned by common hemlock. Ducks have been seen stupefied and paralytic from eating the seeds of the plant. Milk and oil save seven out of nine affected by the poison.

The treatment of poisoning by hemlock consists in emptying the rumen of cattle and sheep, and inducing vomiting in the dog; in all animals the strength must be supported by stimulants, and artificial respiration resorted to should the breathing have ceased.

Hemlock yields a volatile oil upon distillation with water, which appears destitute of noxious properties. The active principle is a peculiar volatile alkaloid, *conia*, which exists in the plant, combined with an acid, probably the coneic, by which it becomes fixed, so that it is not given over with water in distillation. Conia is a yellowish liquid, of oleaginous aspect, strong penetrating mice-like odour, and very

acid benumbing taste. It is an energetic poison, its effects being identical with those of hemlock itself.

The Water Hemlock—*CICUTA VIROSA*—is often left untouched on pasture ground by horses and cattle. In Sweden and Norway goats and sheep, but especially the latter, are affected by the poison. Donkeys become vertiginous from eating it. It is said that in Norway pigs eat it without danger, and birds likewise are unaffected by partaking of the seeds. Weidmann observed a two-year old ox suffering from the effects of the *Cicuta*. The symptoms were—loss of appetite, distended belly, hanging head, listlessness, half-closed eyes, reddened mucous membranes, and feeble gait; pulse quick and irregular. Blood-letting seemed to do harm; half an ounce of muriatic acid in 3 quarts of water appeared to be more beneficial.

Damitz saw four head of cattle die four hours after eating of the fresh root. Other seven were taken with tetanus and other symptoms, which disappeared by bleeding and the administration of strong vinegar. Krausse speaks of horses dying from eating hay which contained water hemlock: the head and neck were bent to the right; the look was dull, eyes strongly withdrawn in the orbits, pupils dilated; involuntary mastication; bluish-coloured mucous membranes; pulse indistinct, heart-beats 120–123, and respirations 26 to 30 in the minute; death occurred with convulsions.

*ORNANTHE CROCATA*—the hemlock Water-Dropwort or Water Parsnip—is considered one of the most virulent of English vegetable poisons. Dr Christison considers that as it grows in Scotland it is not poisonous. M. Bellamy, veterinary surgeon at Rennes, published some experiments on this poison in the *Recueil de Médecine Vétérinaire* for 1856. The symptoms noticed were of accelerated breath-

ing, foaming at the mouth, injected mucous membranes, pulse feeble and frequent, tetanic spasms or violent convulsions of the limbs, symptoms of colic, and lastly, paralysis of the hind extremities, and death. The canine species would seem to be less affected by the poison than man, horse, or cattle. Bellamy recommends, in the treatment of cases of poisoning by this agent, to use blood-letting, emetics and purgatives, mucilaginous draughts, and cold applications to the head.

The fine-leaved Water Hemlock — *PHELLANDRIUM AQUATICUM*—is another umbelliferous poison. The leaves of *ÆTHUSA CYNAPIUM* are also to be feared; Mogford has known them to induce purgation in the horse, but nothing further. *CHÆROPHYLLUM SYLVESTRE* is noxious; and *Sium LATIFOLIUM* has proved poisonous to cattle in Sweden, inducing copious perspiration, delirium, and sometimes death.

*IPEACACUANHA*.—According to Bracy Clark, 3 ounces of this drug may kill a horse; Tabourin thinks that a large dose is required. Cattle are more affected by it. The symptoms are agitation, colicky pains, nausea, violent efforts to vomit, and purgation.

*COLCHICUM AUTUMNALE*.—Professor Weiss has been at some trouble to collect information regarding poisoning by meadow saffron, which is the most common of plants proving injurious to domestic animals. The latter will generally avoid it, unless pressed by hunger, or if it be cut up and mixed with other substances. Mr Musgrave, in the *Veterinary Record* for 1846, says that cattle will graze amidst the deep green tufts of meadow saffron, seldom touching it, except they come from a distance, or from a different pasture, when they do not seem to recognise its nature at

once, and partake of it freely, until its poisonous effects, characterised by profuse, liquid, muddy, and foetid stools, are produced. The leaves, stems, and seeds are all noxious, but especially the seeds, which, if swallowed, are said to adhere to the coats of the stomach, and induce, at the several points of adhesion, spots of inflammation, which occasion death. Colchicum acts on the stomach and intestines as an irritant, on the brain as a narcotic, and favours decomposition of the blood. Death sometimes occurs rapidly from paralysis, but generally animals survive several days. Hübner mentions an instance of three cows dying an hour after partaking of meadow saffron in the green state. Horses and oxen that survive remain for weeks dull, and have an awkward gait.

Stolz and others observed pigs, after eating of the unripe seed capsules, with visible mucous membranes of a blue colour, dulness, nipped in at the flanks, weak gait, tail depressed, eyes dull and closed, cold extremities, foaming at the mouth, vomiting of green frothy matter, diarrhoea with foetid and blood-stained fæces. Most pigs retain their appetite and desire for drink. Frey observed difficult breathing and accelerated pulse, shrunken abdomen, and liquid greenish evacuations per anum. According to Stolz, 20 out of 32 pigs, from two to four months old, died presenting the above symptoms. Three out of four pigs died from partaking of a boiled mess containing colchicum and potatoes.

The *post-mortem* appearances consisted in distended stomach, inflammation and gangrene of the latter and of the intestines; blood dark and thick; the brain congested. Milk and animal charcoal were exhibited as antidotes.

Gierer, Trachsler, Aschmann, Hierholzer, and others, have spoken of cases of poisoning in the horse by colchicum. The animals were dull, without thirst or appetite;

in some cases the thirst was excessive. The mucous membranes were of a dark blue colour; eyes dull, expression staring, pupils dilated; pulse quick, scarcely perceptible; abdomen distended, and urine dark; occasionally there were no fever symptoms. In the cases that were not severe the breathing was scarcely disturbed; but in others it was difficult, panting, and accompanied with sighs and groans. Hierholzer observed colicky pains, rolling, sitting on the haunches, no discharge of fæces or urine. After death, inflammation and gangrene of the mucous membranes of the stomach and intestines were observed; the lungs were gorged with blood. In the treatment of these cases, Aschmann recommends marsh mallow decoction with fenigreek seeds, with elder and chamomile flower decoction; the animals to be warmly clothed, and warm fomentations to be applied to the abdomen. The horses that were spared remained weak, and with a feeble gait, for fourteen days. Mr Morton has spoken of the sedative, laxative, diuretic, and diaphoretic properties of colchicum, given in 3 ounce doses twice daily. The animals evinced no disinclination for food, but it was rather thought that the appetite had increased.

When cattle partake of large doses of meadow saffron, according to Musgrave, the first effects consist in purging of liquid fæces, which are muddy and very offensive; extreme depression of the general system, and especially of the circulatory apparatus, the pulse being irregular and scarcely perceptible, and the exhalants on the surface of the body called into augmented action from apparent debility. Mr Musgrave first observed the poisonous effects of the meadow saffron in 1842, when three bullocks became quickly purged after eating the leaves and seed-vessels of the plant, which had been separated from the new hay that the latter might not be too much heated. On the 22d of May 1844, Mr Musgrave was requested to see eight



yearling heifer calves which had just been brought from Gloucestershire, and, two days previously, turned into a pasture where the meadow saffron grew in considerable abundance. It was at that time in full leaf, and beginning to seed. Mr Musgrave found all the calves more or less affected, and presenting the following symptoms:—Violent purgation, the dejections being liquid, of the colour of muddy water, and extremely fetid. Two were lying down and unable to rise; the rest stood with their backs arched, their coats staring, the abdomen of some of them swollen, and they all seemed afraid to move. Their ears and heads were drooping; the eyes were glassy, and the pupils dilated; the nose dry and cold, as were the ears and other extremities; the pulse was irregular, and too quick and weak to be counted. On the two lying down, perspiration stood in drops on the hair like dew. The urine was small in quantity, and dark in colour. Five out of the eight died. Kufener has observed no discharge of excrement, and Frey speaks of diminution in the quantity of milk secreted. Lindenberg has seen many of the above symptoms, with staring coat, grinding of teeth, evacuation of blood with the fæces, and twitchings of the limbs, with slow and difficult movements in progression.

The *post-mortem* appearances are, according to Lindenberg, those of carbuncular fever, with the veins gorged with blood; the alimentary canal the seat of extravasation of blood, but not of true inflammation. The first and second stomachs contained liquid matters, whereas the contents of the third and fourth presented nothing particular. The bladder contained red urine. Musgrave mentions peritoneal inflammation, and inflammation of the omasum.

‘The treatment of cases of this kind must always depend,’ says Mr Musgrave, ‘on the severity of the symptoms when the animal is first seen. Under all circumstances, the beast

should be at once housed or clothed ; then, if the poisoning be only in the first stage, that is, before the circulation is much depressed, or very violent purging has set in, it would be as well, perhaps, to give a strong oleaginous purgative at once, with the twofold view of overcoming the action of the poison and forcing it onward, a practice which seems to be very successful with the farmers I have alluded to. But if, on the contrary, it should have arrived at a more advanced stage (and it is rare that it will not be so when the practitioner is called upon to attend), when the general system shows considerable depression, and violent purgation with liquid foetid stools have commenced, the first object must undoubtedly be to allay the pain and irritation set up, by giving a full dose of opium and camphor, combined with linseed oil ; also, apply some strong stimulating embrocation to the belly and extremities. If the symptoms still continue severe, throw up emollient injections with opium ; drench freely with linseed tea and gruel, repeating the opium if found necessary, and even adding ether, according to the state of depression, until the unfavourable symptoms begin to subside. Should any signs of debility remain, a dose or two of a carminative tonic and astringent will seldom fail to effect all that is required to perfect the cure. But if these measures prove of no avail, nothing that I am aware of will save the animal. One circumstance connected with these cases is worthy of especial remark, namely, that in every *post-mortem* examination I have made, oak buds and leaves have been found with the colchicum among the ingesta. They looked fresh, as if just eaten, and were scarcely discoloured. It struck me that the animals might have been instinctively led to eat these astringent substances as a remedy for their sufferings ; and this view was strongly confirmed on turning out some affected animals, when they began immediately to browse on the oak boughs within

their reach, and would touch nothing else. Animals after their recovery may be safely turned again into the colchicum meadows, as they will ever after refuse the plant.'

**MONKSHOOD**—*Aconitum Napellus*.—This plant, indigenous in the European Alps and common in gardens, is a most virulent poison. Its flowers are large and violet coloured. The roots somewhat resemble a cluster of radishes, and have been mistaken for horse-radish, with fatal consequences. All animals are poisoned by aconite; but cases of accidental poisoning are chiefly observed amongst the young cattle in Switzerland. It has been said that goats on the Austrian mountains eat the plant without suffering. Hertwig has seen sheep, and still oftener goats, eat the flowers of monkshood, and die speedily afterwards. Hübner says that goats that eat of it become affected with tympanitis, vomit frightfully, and have a staring and anxious look. They recover without treatment; and the milk secretion, which is checked from the influence of the poison, soon returns. The symptoms produced in the horse by aconite are coma, efforts to vomit, cold sweats, difficult breathing, small and thready pulse, and paralysis of the hind quarters.

Dr Fleming considers that death by aconite may occur, 1st, by producing a powerful sedative impression on the nervous system; 2d, by paralysing the muscles of respiration, and causing apnoea; and 3d, by producing syncope.

The taste of aconite, which is at first bitter, but after a few minutes giving rise to numbness and tingling of lips, is believed by Dr Christison to be sufficient to distinguish the poison from others. Dr Pereira suggests, like Dr Christison, the preparation of an alcoholic extract from the contents of the stomach; but that, in addition to tasting, the substance may be applied to the eye, as the poisonous extract produces contraction of the pupil.

**ACONITA.**—The most formidable poison yet discovered. It is an alkaloid contained in all parts of the aconite, but especially the root.

**MUSHROOMS—Fungi.**—The domestic animals seem to avoid mushrooms. Weiss mentions a fact relating to some geese in a forest, which presented symptoms of giddiness and rolling about, a peculiar appearance as if mad, whereupon death followed. Out of 600 affected, there were 180 deaths. After death, portions of mushroom of various sizes (of *Agaricus muscarius*, *necator bulbos. alb. et citr.*, *Pyrogalus*) were met with in the cesophagus and proventriculum, where the mucous membrane was reddened and covered with dark spots. In the geese that survived a day, no bits of mushroom were found, but ash-grey, yellowish, and strongly odorous ingesta; the mucous membrane of a dark brown colour, and the intestine inflamed. No other lesions in the system. The young animals died soonest. As antidotes, liquor ammoniæ, vinegar, oil, etc., were employed.

**DEADLY NIGHTSHADE—Atropa Belladonna.**—*Poisonous doses.*—For the horse, from 4 to 6 ounces of the powder (Hertwig). Six drachms of the tincture in injection produced death in two hours. The ox is even more severely affected than the horse, but smaller ruminants can eat it with impunity. In the dog, 40 grains of the watery extract, or 2 drachms of the powdered leaves, are sufficient to destroy life.

*Symptoms.*—In the dog there is loss of appetite, dullness, dryness of mouth, vomiting, borborygma, general excitement followed by lowering of the temperature of the body; indications of paralysis of the hind limbs, vertigo, dilatation of pupils and blindness, convulsions, and coma. In herbivorous quadrupeds there are most of the

above symptoms, with diarrhœa, relaxation of sphincters, paralysis of the hind quarters, and death, preceded or not by convulsions.

*Treatment.*—Strong decoctions of coffee, and the general treatment as recommended for opium.

**ATROPIA.**—The alkaloid and active principle of belladonna, poisonous, and occurring in white silky crystals of alkaline reaction. Soluble in 500 parts of water, and readily dissolved by alcohol, ether, and diluted acids.

**STRYCHNOS NUX VOMICA.**—A plant of the order Loganiaceæ, the seed of which is the deadly NUX VOMICA. The tree is of moderate size, growing in Ceylon and several districts in India, has a short crooked stem, ribbed leaves, small greenish-white flowers, and a beautiful orange-coloured round fruit, the size of a small apple, having a brittle shell, and a white gelatinous pulp. The wood is exceedingly bitter, particularly that of the root, which is used to cure intermittent fevers and the bites of venomous snakes. The seeds are employed in the distillation of country spirits, to render them more intoxicating. The pulp of the fruit seems perfectly innocent, as it is greedily eaten by many sorts of birds.—*Roxb.* The seeds are circular, not quite an inch in diameter, and two lines in thickness, concave on one side, and convex on the other, very tough and horny, covered with a velvety down consisting of fine hairs, ash-coloured and silky; internally the seeds are whitish and translucent; they are difficult to pulverise, possess no odour, but are extremely bitter. The Germans fancy they can discern a resemblance in them to grey eyes, and call them crow's eyes. Dog-killer and fish-scale are two Arabic names for the vomice nut.

**THE BEAN OF ST IGNATIUS.**—The seed of *Strychnos Ignatii*, a tree of moderate size, growing in the Philippine

Islands. 'The bean of St Ignatius is about an inch long, of less thickness, convex on one side, obscurely angular on the other, of a pale brown colour, externally covered with a very short down, internally translucent, hard, and horny.'

Nux vomica and the bean of St Ignatius both owe their properties to three alkaloids—*Strychnia*, *Brucia*, and *Igasuria*, united with a peculiar acid, the igasuric or strychnic. For practical purposes, strychnia may be regarded as the active principle; it is most abundant in the bean of St Ignatius, which is therefore much more powerful than the vomic nut; the first contains 1.2, and the last 0.4 per cent.

Whether the nux vomica, or its alkaloid strychnia is used, the effects on the system are the same, the difference is in the dose. A horse has been said to take from 1 to 3 ounces of powdered nux vomica with impunity. Vallon, on the other hand, asserts that from 6 to 7½ drachms invariably prove destructive. Ten grains of strychnia are sometimes more than sufficient to kill a horse. From 3 to 4 grains introduced into the cellular tissue, and any dose above half a grain injected in a vein, will prove fatal. Ruminants will support much larger doses of the nux vomica than the horse. According to Tabourin, 4 grains of strychnia introduced beneath the cellular tissue destroyed a cow in the course of twenty minutes. As regards the smaller ruminants, Hertwig has said that a goat two years of age partook of upwards of 4 ounces of powdered nux vomica, in the course of eleven days, without giving any indication of suffering. In the Report of the Lyons Veterinary School for 1812, Tabourin has found stated that a sheep will die in the course of half an hour from taking about an ounce of nux vomica, but that it would require about 8 ounces to give rise to marked symptoms of poisoning in the goat. Tabourin has experimented on the pig, and

has seen the most alarming symptoms from the exhibition of 50 grains of the powdered nut. Dr Christison has seen a wild boar killed in ten minutes with the third of a grain, injected, in the form of an alkaline solution, in the chest. Dogs, if very robust and large, can only be destroyed, according to Barthelemy, by half an ounce of nux vomica. Orfila has observed poisonous effects in these animals from 10 grains of the powder. Of strychnia, half a grain blown into the mouth of a dog produced death in five minutes.—*Pelletier*. I have seen the eighth of a grain give rise to alarming symptoms in a pointer. Dr Christison says he has killed a dog in two minutes with the sixth part of a grain, injected, in the form of an alkaline solution, into the chest.

From the experiments of Magendie and Delille, in 1809, it was learned that 10 grains of nux vomica, taken internally, killed a dog in forty-five minutes, and a grain and a half thrust into a wound killed another in seven minutes. The symptoms are the following:—A few minutes after the introduction of the poison the animal becomes agitated, and tumbles; in a short time it is seized with stiffness and starting of the limbs, which increase until a violent general spasm ensues, in which the head is bent back, the limbs are extended and rigid, the spine stiffened, and respiration checked, the chest being fixed. The slightest noise and touching the animal, excite the fits. During the latter, there are occasionally involuntary emissions of urine and semen. Intervals of rest occur; but the mucous membranes acquire a red colour, the pulse is quick and hard, paroxysm follows paroxysm, until the animal perishes, suffocated or exhausted.

*Post-Mortem Appearances*.—The left auricle of the heart, as also the intestines, have been known to contract for nearly an hour after death.—*Dun*. The lesions are those met with in cases of death by suffocation. The viscera

have been found perfectly healthy. The brain and spinal cord injected, and fluid accumulated in the spinal canal.

*Treatment.*—When the poison is in the stomach, vomiting must be excited in those animals that can thus evacuate this cavity. Oleaginous draughts and purgatives must be given. Alcohol, ammonia, sulphuric ether, and camphor have proved useful. Morphia and opiates in general likewise act beneficially. M. Bardet has proposed chlorinated water as an infallible remedy. Artificial respiration ought to be persevered in; and infusions of galls and green tea, on account of the tannin they contain, are said to be useful antidotes.

*Tests.*—Dr Marshall Hall proposed the adoption of a physiological test for strychnine. The contents of the stomach and intestines, of the heart and blood-vessels, being carefully evaporated, a portion of the dry residue is placed in water, and a frog placed in the latter will become seized by tetanic spasms. Marshall Hall, in writing to the *Lancet* for the second time, advocating the physiological test, said (in June 1856) that the 500th of a grain had been made manifest to a multitude of beholders at once, and so manifest, that no visual object could be more conspicuous—one even very different from the fact of a mere change of colour. In adopting this test, it should be remembered that the smaller frogs are more susceptible than the larger—these should be used recently taken from the pond, from the mud if possible. The skin should be well dried by means of blotting paper. The strychnia to be tested should be dissolved in as small a quantity of water as possible, and dropped on the back or inserted under the skin of the frog. In a short time the frog becomes affected with tetanoid or epileptoid spasm or convulsion, on the application of the slightest cause of excitation. It is *strychnoscopic*.

Dr Macadam has made some very interesting experi-



ments on strychnine poisoning, and the tests for strychnia. The tests are many, and some quite characteristic, as seen by the following table :—

#### THE STRYCHNINE TESTS.

- A. *Potass*, a white precipitate, insoluble in excess.
- B. *Bicarbonate of Soda* (in acid solution), no precipitate.
- C. *Sulphocyanide of Potassium*, a white precipitate.
- D. *Perchloride of Mercury*, a white precipitate.
- E. *Perchloride of Gold*, a lemon yellow precipitate.
- F. *Chlorine Water*, a white precipitate, which dissolves in ammonia to colourless liquid.
- G. *Nitric Acid* (cold), colourless solution ; (heat), yellow solution.
- H. *Sulphuric Acid* (with trace of *Nitric Acid*) and *Binoxide of Lead*, a violet, changing to a red colour.
- I. *Sulphuric Acid* and *Binoxide of Manganese*, a violet, changing to a red colour.
- J. *Sulphuric Acid* and *Bichromate of Potash*, a violet, changing to a red colour.

The tests A to G cannot be applied excepting when the quantity of strychnine at the command of the operator is considerable, so that in dilute solutions they fail to act. The remaining tests, H to J, are, however, much more delicate, and will indicate a most minute amount of strychnine.\*

\* Dr Macadam says, 'So far as my experience goes, I prefer the sulphuric acid and bichromate of potash test, as it is much more certain in its action, and is more delicate than any or all of the other tests. The colour indications are best seen in a pure solution of strychnine ; the presence of organic matter impedes the action of the test, and alcohol, acetic acid, and other bodies, entirely destroy the characteristic colour. In order to steer clear of these sources of error, Dr Letheby has lately suggested that the substance to be tested should be treated with sulphuric acid, and placed on a piece of platinum foil connected with the positive pole

To detect the substance, digest a part of the stomach, or other substance supposed to contain strychnine, in a dilute solution of oxalic acid for some hours. Thereafter warm, and strain through muslin. The filtrate is rendered slightly alkaline by stirring with a rod of caustic potash. It is then placed in a stoppered narrow-necked bottle, several ounces of ether are added, and the whole is well

of a galvanic battery, and thereafter, on touching the liquid with the negative pole of the battery, which terminates in a platinum wire, the characteristic violet tint is at once produced. In this way ~~rough~~ of strychnine in pure water has been detected. I have repeatedly tried this process, and can bear witness to the accuracy of the test; but in practice I have found the sulphuric acid and bichromate of potash to be a more delicate test, though it is much more difficult to manage. Lately a good deal has been said in disparagement of the colour tests for strychnine, and considerable doubt has been thrown upon the trustworthiness of colour tests in general. Precipitate tests are certainly more satisfactory than colour tests, because they signify the presence of a larger amount of the particular substance under examination; but, in general, colour tests are far more delicate in their action than precipitate tests. A very good example of this occurs in testing for iodides. When these are abundant, precipitate tests with soluble salts of lead and mercury may be readily obtained; but by dilution a point is at last reached when lead or mercury solutions cease to be precipitated by the liquid containing the iodide. At this point the starch test, which, in a very dilute solution of an iodide is essentially a colour test, comes into play, and long after the precipitate tests fail to indicate an iodide, the colour test shows unmistakable evidence of its presence. The same remark applies to testing for solutions of persalts of iron, and copper, by means of ferrocyanide of potassium. In strong solutions a blue precipitate is indicative of iron, and a ruddy-brown precipitate speaks of copper; but when dilute solutions are examined, blue and ruddy-brown colourizations are alone obtained. Colour tests, therefore, are the most delicate of all tests; they indicate the presence of a body when precipitate tests cannot do so; and for my own part, I see no reason why I should distrust my sense of colour whilst manipulating in my laboratory, and confide in it at other times."

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shaken. The liquid is allowed to settle, when the ether will rise to the surface with strychnine (if any be present) in solution. The ether is then drawn off into a porcelain evaporating basin, or even in a common porcelain plate; it is allowed to evaporate spontaneously. When nearly dry, heat is applied to remove any remaining traces of ether, and the residue is tested for strychnine in the following manner:—A little of the residuum is tasted; if the taste be strongly bitter, strychnine is very likely present. A few drops of the strongest sulphuric acid are placed upon the plate, and a drop of solution of bichromate of potash is added; the two substances are then allowed to run together, when, if strychnine be present, beautiful violet streaks will be perceived, which soon change to red. The two above-mentioned tests are quite sufficient to identify strychnine. The other colour tests, viz., sulphuric acid and binocide of lead—sulphuric acid and binocide of manganese, are worked in the same way, except that small crystals of binocide of manganese or lead are added instead of the solution of bichromate of potash.

RUE.—The leaves of *Ruta graveolens*, an under shrub two or three feet high. In very large quantities it acts as a narcotic poison, producing vomiting in some animals, besides purging, violent abdominal pains, tenesmus, bloody fæces, severe strangury, fever, giddiness, delirium, involuntary muscular movements, and somnolency; with a small, slow, and feeble pulse, and great debility.

THORN-APPLE—*Stramonium*.—*Datura stramonium*, or Jamestown weed, 'is an annual plant, from two to six feet high, growing in all quarters of the world, and flourishing especially in rank soil, as on dung-heaps, and on the road sides and commons near towns and villages, where refuse matter is apt to be collected. Its original native country

is uncertain. It is often clustered in patches, and scents the air of the neighbourhood with a disagreeable odour.'

The operation of stramonium resembles closely that of belladonna. Five ounces of the fresh juice produced only drowsiness in a horse; and two pounds and a half of the seeds, given to another horse, though they proved fatal, did not destroy life until after fifty-two hours.—(*Pereira's Mat. Med.*) The seeds and the flowers are considered to be more noxious than other parts of the plant. Tabourin says that 4 pounds of the seeds have been necessary to kill a horse. In the dog, half an ounce of the extract introduced into the stomach, and 2 drachms injected in the veins, have produced death.—(Orfila.)

The symptoms of poisoning by stramonium in man have been well described:—'It causes great uneasiness of the throat, with a feeling as of strangulation, anxiety, and faintness; partial or complete blindness; great dilatation of the pupil; sometimes deafness; flushing of the face; vertigo; headache; hallucinations; delirium, of a whimsical, ludicrous, or more rarely furious character; tremors; paralysis; and at last, stupor, with convulsions in rare instances. There is usually, in the advanced stage, great prostration, as indicated by the very feeble pulse and cool skin; and sometimes the local irritant influence of the poison is evinced by a burning pain at the stomach, nausea, and vomiting.' Similar symptoms have been observed in the domestic animals.

The treatment of poisoning by stramonium is the same as for opium.

**TOBACCO**—The leaves of *Nicotiana Tabacum*.—Tobacco contains an organic volatile alkali—*nicotia*; and a concrete volatile oil—*nicotianin*. *Nicotia* is the active principle, though *nicotianin* occasions giddiness and nausea when swallowed. It is said that it is probably developed in the

drying of the leaves, and that it is the odorous principle of the drug. 'Tobacco yields by destructive distillation an empyreumatic oil, which may be obtained colourless by rectification, but becomes brown by time; and, as usually found in the shops, is dark-brown, or almost black, and of a thickish consistence. It has an acrid taste, and precisely the odour of old tobacco-pipes. Two drops of it killed a dog. It is therefore very poisonous; but, according to the experiments of Brodie, it acts in a manner quite different from tobacco, and must, consequently, contain an energetic principle not pre-existing in the plant. It is said to contain nicotia.'

*Horses and Oxen* appear unaffected by feeding on the fresh leaves; but, according to Hertwig, 6 pounds of dried tobacco caused death in a cow. A horse dropped, and suffered from nausea and convulsions, from an injection into the veins of 2 ounces of decoction, made with half an ounce of the dried leaves in 6 ounces of water.

In the dog, tobacco acts as an active emetic. If the œsophagus be tied, a drachm will prove fatal. The same quantity injected in an œema will kill.—(Hertwig.)

I have known goats to eat considerable portions of cigars, appearing fond of them, and suffering no inconvenience.

*Symptoms.*—A state of agitation, indicated by movements of the head and tremors of the extremities; excessive nausea and vomiting in carnivorous and omnivorous animals; in herbivorous quadrupeds violent purgation ensues, and the excretions have a very offensive odour; there is tympanitis and abdominal pain. Pulse weak, small, irregular, sometimes slow, and at others frequent; staring coat, with coldness of ears and extremities, and cold sweats over the body; torpor supervenes, with much prostration; the animal falls to the ground, foams at the mouth, is affected with paralysis, dilatation of pupils,

convulsions, and death. The whole of these symptoms are clearly due to absorption of the active principles of the tobacco; and Sir B. Brodie's experiments upon dogs prove that the primary general operation is upon the nervous centres. 'An infusion of tobacco thrown into the rectum caused death in an hour, by paralysing the heart. But if the animal were decapitated, and respiration sustained artificially, the poison produced no effect upon the circulation, though it must have equally entered the system. That death results from a cessation of the action of the heart, and not of respiration, as in the case of cerebral stimulants, is shown by the fact, noticed by Brodie, that after apparent death, that organ was found perfectly quiescent. The empyreumatic oil seems to act differently; for, upon the same authority, the heart, after apparent death from that poison, was, on opening the body, observed to be beating with regularity and vigour.\* There is a strong analogy between the effects of tobacco and digitalis; only the first lowers the frequency of the pulse less than digitalis, and the latter produces less nausea and vomiting than the tobacco.

*Post-Mortem Appearances.*—More or less redness of mucous membrane of alimentary canal; it is sometimes gangrenous; there is congestion of blood in the nervous centres. The lungs and heart have been found livid, filled with blood, and covered with ecchymoses.

*Treatment.*—Evacuants in the shape of emetics or purgatives. Mechanical removal of contents of rumen in the ox. If administered by the rectum, purgative enemata are to be used; opiates, demulcent drinks, alcoholic and ammoniacal stimulants, and coffee.

WOODHAR.—This is a poison known under several names, and which was first imported into Europe from Guiana

\* Wood. Op. cit. vol. ii., p. 129.

by Sir Walter Raleigh, in 1595. Sir Walter brought arrows charged with the deadly substance. And it is peculiar as not affecting animals if introduced in the alimentary canal, but only when directly entering the blood in a penetrating wound. The action of woorara has been much studied by physiologists; and the best, and one of the most recent writers on the subject, is Claude Bernard.

YEW—*Taxus Baccata*.—The experiments of Viborg have placed it beyond doubt that the yew-tree is poisonous. The noxious properties may not be so marked if the substance be eaten with other food; perhaps the age of the tree, the soil on which it grows, and other circumstances, affect its action. There are several cases recorded of poisoning in the horse and ox by the leaves of the *Taxus baccata*; and amongst others, we may mention particularly those to be seen in the *Veterinarian* for 1854, at page 386, and in the *Transactions of the Veterinary Medical Association* for 1844, page 270.

The *symptoms* and *post-mortem appearances* in cases of poisoning by this substance are those common to narcotico-acrid agents. There appears a tendency to apoplexy when a quantity of yew enters the stomach. It is found in the latter, the mucous membrane being inflamed, and the epithelium easily peeled off. The vessels of the brain are congested, but other parts of the body appear healthy.

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#### POISONOUS GASES.

There are two gases—hydrogen and nitrogen—considered as simply irrespirable, not acting as poisonous gases properly so called; in fact, exerting no deleterious influence on the living organism. Bernard believes that

carbonic acid belongs to the class of irrespirable, and not to that of absolutely poisonous gases. The blood carried to the lungs by the pulmonary arteries is highly charged with carbonic acid, and Bernard says that, as it is proved that in the process of respiration the carbonic acid is only discharged as the oxygen penetrates, an interchange occurring which is only possible between two gases of different natures from each other, so if the external air be highly charged with carbonic acid, the latter being more soluble, interferes with the passage of the oxygen through the moist membrane of the respiratory organs, and an obstacle therefore exists to the arterialization of blood. Mr Taylor and Dr Christison, on the other hand, believe that it is a very poisonous gas. The majority of gases do exert a deleterious influence on the system, and their action may be compared to that of hydrocyanic acid, and not to the method of death by closure of the respiratory passages.

There can never be any difficulty in determining what gas may have been in operation in producing death. If we exclude carbonic acid, the gases evolved during the combustion of charcoal and coal, we find that gases are not met with in sufficient quantities in nature to produce accidental death; and circumstantial evidence will sufficiently account for the manner in which an animal has lost its life, should a poisonous gas have been employed to effect the object.

Of the poisonous gases we may mention :—

**AMMONIA.**—A highly irritant gas, with a strong pungent odour. It may cause inflammation of the bronchia and lungs if inhaled in sufficient quantities; and it produces a remarkable action on the cerebro-spinal system, giving rise to disordered movements, vertigo, convulsions in dogs, coma in the herbivora, insensibility, paraplegia, and death. Acetic acid and acidulated water may be successfully employed as antidotes.



**CARBONIC ACID.**—This gas is heavy, greedily absorbed by water, and it is the product of respiration, combustion, and fermentation; it is met with abundantly in coal mines, in wells, cellars, and excavations. Damp sawdust and straw slowly absorb oxygen and set carbonic acid free.

In the process of slaking lime and from brick kilns carbonic acid is given off, which may render the surrounding air irrespirable. Confined air, in which the animal's breath becomes irrespirable, from the oxygen being partially consumed and carbonic acid accumulating.

*Symptoms.*—At first, over-excitement; full, sharp, and accelerated pulse. Afterwards stupor, paralysis, and the venous blood acquires a black colour. The visible mucous membranes have a bluish-livid hue, and animals die without uttering a cry or being convulsed.

*Post-Mortem Appearances.*—Those of apoplexy.

*Treatment.*—Fresh air; cold and hot ablutions alternately to head and neck; artificial respiration; allow fluids to flow from the mouth; irritate the nostrils by snuff, hartshorn, etc.; rub all the limbs upwards, making firm pressure energetically; induce the inhalation of oxygen or of dilute pure ammonia, etc.

Dr Marshall Hall's method of treating apnoea, or, in other words, poisoning by carbonic acid, has been justly stated the most simple, philosophical, and beautiful that could be devised; but we cannot apply postural respiration in quadrupeds; nevertheless I think the gradual and deliberate compression and relaxation of the chest, aided by alternate abduction and adduction of the fore extremities, will answer our purpose. With reference to the inhalation of oxygen and ammonia, Dr Marshall Hall has said, 'I cannot regard the inhalation of oxygen as a very promising measure. Its value requires to be submitted to much further trial and investigation.'

'The inhalation of dilute pure ammonia appears to me

to have more in it of promise. The blood is overcharged with carbonic acid; the inhalation of ammonia would neutralize this carbonic acid and form the carbonate of ammonia; the carbonic acid is the blood poison; the carbonate of ammonia is free from any deleterious quality.

‘It cannot be repeated too often or too earnestly, that all these remedies of the second class, if I may so designate them, must be regarded as entirely subsidiary to the constant persistence of respiration.’\*

The gases evolved during the combustion of *charcoal* are said by Orfila to consist of carbonic acid with carburetted hydrogen. Bernard thinks many deaths from inhalation of gases given off from burning charcoal are due to the action of *carbonic oxide*, an extremely poisonous gas, which, even inspired in a pure state, almost immediately induces coma. It is easily kindled, and burns with a pale blue flame like that of sulphur. After the death of animals poisoned by carbonic oxide, the blood is found coagulated, and as florid as in animals made to breathe in pure oxygen.

During the combustion of *coal*, besides carbonic acid, poisonous sulphuretted and carburetted hydrogen gases are given off. The sulphuric acid met with also under these circumstances is a highly irritant gas.

**SULPHURETTED HYDROGEN.**—This intensely poisonous gas has a very offensive odour, and is met with in drains and sewers, commonly mixed with hydrosulphuret of ammonia, carbonic acid, etc. In a concentrated state it may cause immediate death, acting apparently on the blood and nervous system.

We need not here mention many other noxious substances in the aeriform state—such as *chlorine*, *hydrochloric*

\* Prone and Postural Respiration in Drowning. By Marshall Hall, M.D., F.R.S., etc. etc. London, 1857.

*acid gas, nitrous acid, cyanogen, the vapours of iodine and bromine.*

*Treatment.*—Place the animals suffering under the influence of an irrespirable or noxious gas where an abundant supply of fresh air can be insured, and keep up artificial respiration. It is important to employ this method of reviving animals as early as possible; and, in order to bring about reaction, friction and cold or stimulating applications to the skin are to be recommended.

In a chamber, stable, or other locality where sulphuretted hydrogen accumulates, a stream of chlorine gas evolved from bleaching powder by the addition of some sulphuric acid will prove effectual as a disinfectant. If sulphuretted hydrogen be given off from decomposing organic matter, its evolution may be checked by sprinkling on the heap MacDongall's Patent Disinfecting Powder, or Sir William Burnett's Disinfecting Fluid. These disinfectants are equally efficacious against other noxious gases.

## MEMORANDA THERAPEUTICA.

**ABDOMEN, Injuries to.** See Hernia.—In penetrating wounds, surgical interference according to circumstances. In broad abdominal wounds in large quadrupeds, use the quilled and metallic sutures; in small animals the glover's suture. After-treatment consists in stimulants, to guard against collapse; and, secondly, low diet, narcotics, or sedatives, 127, 128.

**ABDOMINAL DROPSY.** See Ascites—Dropsy.

**ABORTION.**—Evacuate rectum by clysters. Facilitate expulsion of foetus by emmenagogues, 98. Induce opening of os uteri, if preternaturally contracted, by mechanical means, and sedative applications, 299; ext. belladonnæ. Attend to expulsion of membranes. If foetus or foetal appendages putrefy, use disinfectants; chlorinated lime; purgatives, 44, 65, 106, 109, 113, 115, 117. Hæmorrhage frequently supervenes—see Flooding.

**ABSCCESS, ACUTE or HOT.**—Linseed-meal poultice. Evacuation of matter by incision. If opening ulcerates, use nitrate of silver, 272. In cold or chronic abscess use blisters, setons, astringent injections.

**ABSCCESS OF BONE.**—Trephine, evacuate the pus, and remove diseased bone.

**ADENITIS SCROPHULA EQUORUM.** See Strangles.—(Scrofulous inflammation of absorbent glands, or External Scrofula.) Good and easily digested food, fresh air and natural exercise. Locally, poultices. Tincture and ointment of iodine. Blisters, page 42, Part I. If ulcers are

indisposed to heal, use dilute nitric acid, resin cerate, or ointment of iodide of lead. Tonics—arsenic, 46; copper, 47; sesquioxide of iron.

**ADYNAMIA NERVOSA GENERALIS.** See Parturient Fever.—In the early stage bleed and apply cold to the head. If the animal be comatose, use stomach-pump for the exhibition of mixtures. Stimulants, 198; turpentine in large doses; arnica, 197; nux vomica or strychnia, 195, 195 a; ergot of rye, 196; purgatives, 40, 65, 114, 119; mustard poultices or blisters on spine; nitrate of silver internally; strychnine applied by the endermic method. Naphtha may be injected in the veins.

**AFTER PAINS**—Heaving Pains in Ewes.—Camphor, ether, belladonna. The latter may be smeared over the walls of the vagina and on the os uteri.

**AGALACTIA**—Suppressed Secretion of Milk.—If obviously symptomatic, the mamma generally regains its activity when the animal is restored to health. If the secretion be suddenly suppressed, without apparent morbid cause, give antimony, 60, 130; stimulating liniment to the udder, 269.

**ALBUGO**—Leucoma.—In inflammatory stage, purgatives, scarify inner sides of eyelids; poultices, or cooling lotions; sedative collyrium, 286, 288; sulphate of zinc, 284; nitrate of silver, 281; corrosive sublimate, 283.

**ALBUMINURIA**—Albuminous Nephritis.—1stly, *Acute*—Bleeding; purgatives; tincture of aconite, 127; hyoscyamus, 139; mustard and ammonia to the loins. 2dly, *Chronic*—Digitalis; colchicum, 179; oil of turpentine. When albuminuria is associated with debility, administer iron, nitric and nitro-muriatic acid, tannin.

**AMAUROSIS** — **Gutta Serena** — **Glaucoma**. — Setons on the poll and sides of the neck, or between the jaws; active blisters over the parotideal region; drastic purgatives, 40; veratria; strychnine internally, and applied by the endermic method.

**AMENTIA** — **COMA** — Immobility of the French authors — **Sleepy Staggers**. — Purgatives, 40; setons in upper part of neck or intermaxillary space; camphor, 147; oil of turpentine, 111; aromatics, 17, 18. When torpor is excessive, absorption in the system is very tardy; hence medicines may be injected into the circulation, such as tincture of white hellebore, dilute solution of ammonia, oil of turpentine; issues on the spine may be used; strychnine by the endermic method.

**ANÆMIA**. — Nutritious and easily digested food; fresh air and moderate exercise; transfusion of blood from a healthy animal. Internally, vegetable bitters, such as rhubarb, 18. Mineral tonics — arsenic, 46; copper, 47; iron, 48, 49, 50, 52, 53; manganese, 189; sulphate or oxide of zinc.

**ANAPHRODISIA** — Absence of Sexual Desire. — If the animal be too fat, it must be reduced to a natural standard; if too poor, good food and tonics are enjoined. In females, especially cows, sexual desire is excited by linseed, hempseed, savin, cantharides. In bitches, metallic copper is recommended.

**ANASARCA**. See Dropsy. — Scarifications; friction; purgatives; diuretics, 34, 39; colchicum; digitalis, 37. Tonics, mineral — iron, 48, 49; copper, 47; mineral acids; vegetable, 52, 54.

**ANEURISM** of Heart and Arteries — Incurable. — In di-

lation of the heart, palliative means, such as rest, occasional purgatives, etc., may prove useful.

**ANGEIOLEUCITIS—Lymphangeitis—Inflammation of the Absorbents—Inflammatory Edema—Weed.—Bleeding generally and locally. Purgatives—aloes, calomel, castor oil. Diaphoretics—the animals warmly clothed; a vapour bath may be used by directing a jet of vapour in various parts of the body. Diuretics—resin; nitre, 34, 39; oil of turpentine. If swelling be great, tincture of iodine should be locally applied. In cases with much debility, tonics and stimulants should be had recourse to. In the chronic form, iodine in form of ointment, blisters, setons. Friction methodically applied.**

**ANGINA—Laryngo-Pharyngitis—Inflammation of the Fauces—Sore Throat.—Low diet; clysters; electuary—sedative, 207, 215, 217; astringent, 218; nitre in water. Counter-irritation with mustard poultice, tincture or oil of cantharides. Irritation of the throat may depend on constipation and indigestion, and then a purgative must be prescribed.**

**ANOREXIA—Loss of Appetite.—Generally symptomatic. If dependent on mere nervous derangement, various medicines may be prescribed, such as assafetida; ammonia; burnt coffee; vegetable tonics and aromatics; rhubarb, 18; gentian; ginger; angustura bark.**

The mouth should always be carefully examined to determine the condition of the teeth, etc.

**ANTHRAX, Simple.—Poultices—yeast poultice; incisions; astringent lotions; caustics, 100. Internally—iodine; bromine—iodide and bromide of potassium.**

**ANTHRAX, Malignant—Anthrax Fever.** Fresh air; cleanliness; abundance of pure water; light and easily digested food; cold ablutions; saline and aloetic purgatives, 41, 42, 113, 115, 119; clysters. In pig and dog emetics, 64, 66. When prostration supervenes, stimulants, 136, 184; camphor, 141; brandy; turpentine, 176; mineral acids, especially the nitro-muriatic, 185; locally, cold water, or a cooling lotion, 279, 280. Incisions—the cut surfaces burned with nitric acid or the hot iron. Pustules must be cauterized actively.

**ANTHRAX HÆMORRHOIDALIS.**—Acidulated clysters; cold water over the loins; saline purgatives; nitro-muriatic acid, 185.

**ANUS, Prolapsus of the.**—Return the protruded intestine. If prolapsed parts be painful and tumefied, use warm fomentations; scarify, and then return them; after which use cold water and astringents, to excite the action of the sphincter ani. In obstinate cases surgical interference, and even incision, is called for.

**APHTHÆ EPIZOOTICÆ—Eczema Epizootica—Foot and Mouth Disease.**—Inoculation, to communicate the diseases to all the stock on a farm at once, and the ill effects of it are thus diminished. The treatment consists in mild purgatives and diuretics. The mouth should be washed out with water containing honey and vinegar, or a little sulphuric acid. Use an astringent powder, 99; or electuary, 318. As a lotion to the exposed sores, use the solution of diacetate of lead; of sulphate of zinc, 276; of alum, 274; of sulphate of copper; of nitrate of silver, 272. The animals should be supported by nourishing diet, and if they cannot masticate they should have gruel and linseed tea.



**APHTHÆ SPORADICÆ.**—For occasional aphthous eruptions in the mouth use mild astringents and laxatives.

**APHTHÆ GENITALIUM.**—Aphthous Eruption of the Genitals.—Mild purgatives, and sulphate of zinc or alum lotion.

**APNŒA.**—Suppressed Respiration.—Clear mouth and fauces mechanically. Apply cold and hot water alternately to the surface of the body. Imitate respiration by compressing the walls of the chest at regular intervals, and as often in a minute as it is natural for an animal to draw breath. If the latter fails and the heart continues to beat, the trachea may be opened, and air forced into the chest by a pair of bellows, or elastic bag, or applying the mouth to the opening. Still-born foals or calves and other animals must be treated, as usual, by exciting respiration; this is most effectually done by plunging them into a cold (not a warm bath) and a hot bath alternately. The just temperatures of these baths, according to Marshall Hall, are from 50° to 60° Fahr. for the cold, and from 98° to 102° Fahr. for the hot bath. The immersion should be momentary, the alternations quick. If this means fails—if irritation of the nostrils, the face, and the general surface, has been tried in vain—not a moment is to be lost, but respiration must be imitated.

**APOPLEXY.**—Abstraction of blood from both jugular veins or temporal arteries, and scarification of mucous membrane of the palate; cold applications to the head; revulsion to the trunk and extremities by mustard and turpentine; active purgatives, 40, 44, 64, 115, 119; croton oil on tongue.

**APOPLEXIA MARITTIMA\***—Ship Staggers.—Blood-letting, clysters, and revulsion by means of mustard or hot blankets.

**ARACHNITIS.** See Meningitis.

**AREOLAR TISSUE, Inflammation of.** See Phlegmon.

**ARTERITIS.**—Salivation by calomel and opium ; blisters.

**ARTHRITIS.**—Abstraction of blood locally or generally, or both combined ; purgatives, diuretics, sedatives ; emollient poultices ; placing the joint, if possible, in a fixed position by starch bandage or other mechanical contrivance ; discutient lotions, 279 ; arnica lotion, 260 ; stimulating liniments, 259, 261 ; blisters, 292, 295 ; actual cautery.

**ARTHROCAE AGNORUM—A. PULLORUM EQUINORUM—A. VITULORUM**—Arthritic Disease of Lambs, of Foals, and Calves.—Purgatives, diuretics, nitre ; counter-irritants, 269, 270.

**ASCITES**—Water in the Belly.—Diuretics, 83 ; squilla, 81 ; digitalis, 79, 87 ; evacuation of fluid by tapping ; tonic medicines. See Dropsy.

**ASPHYXIA**—Pulseless Condition.—Irremediable. See Apnoea.

**ASTHMA.**—Moderate blood-letting ; aloes in the horse ; emetics in dog, 64, 66 ; anti-spasmodics, 129, 135 ; narcotics—opium, 131 ; stramonium ; hydrocyanic acid, 199 ; sinapisms and other rubefacients are often useful.

\* *Damoiseau, Journ. Pratique, 1830. Mellows, Veterinary Record, 1848. Hering, Pathologie, 1849.*

**ATROPHIA MESENTERICA—ATROPHIA LACTANTUM—**  
**Tabes Mesenterica.**—Animals thus affected are in Scotland called 'Piners.' Mild purgatives, tonics and aromatics, cold ablution, iodide of potassium. Enjoin highly nutritious and easily digested food, exercise, fresh air, and cleanliness.

**BILIARY CALCULI.**—Relieve pain induced by the displacement of calculi; and for this use anti-spasmodics, 123; opium, 128, 134, 172; warm fomentations; sinapisms.

**BILIOUS FEVER.**—Bleeding; blisters over the region of the liver; aloes, calomel, clysters. In 2d stage, diffusible stimulants, 147, 186; mineral acids, such as the nitro-muriatic. In both first and second stages the exhibition of 2 drachms of sulphate of potash twice or thrice daily to horse or cow has proved of service.

**BLACK LEG—Black Quarter—Quarter Garget.** See Carbuncular Fever.—Purgatives, 113, 114, 115; setons; incisions; caustics; actual cautery; nitro-muriatic acid, 185; dissulphate of quinine, 188; iron, 189; aromatics, 197.

**BLACK WATER—Wood Evil—Pantas—Moor Ill.** See Red Water—Dysentery Enzootica.—Change of food; moderate blood-letting; purgatives, 113, 114, 115; camphor, 147; turpentine, 176; tonics, 189.

**BLADDER, Inflammation of the.** See Cystitis.

**BLADDER, Inversion of the.**—Attempt return by careful manipulation, aided by local application of warm water and belladonna, or by careful incision of the external *opening* of the urethra.

**BLADDER**, Irritability of.—Moderate blood-letting; purgatives, 108, 110, 116; sedatives, 127; counter-irritation over loins.

**BLADDER**, Stone in the.—Lithotrity, lithotomy, or urethrotomy must be performed.

**BLADDER**, Spasm of the.—Bleeding; warm clysters containing belladonna; warm fomentations. In the female apply belladonna to the urethra.

**BLAIN**. See Glossanthrax and Glossitis.

**BLENNORRHEA** or **Gonorrhœa**, most generally affecting the dog.—Injection of sulphate of zinc, 276; chloride of zinc, 275; nitrate of silver, 272; pills containing copaiba.

**BLOOD** in the Urine. See Hæmaturia.

**BLOOD** in Milk. See Lac. Cruentum.

**BLOOD-STRIKING** in Cattle and Sheep. See Black Quarter, Carbuncular Fever, and Splenic Apoplexy.

**BLOWN** in Oxen and Sheep. See Tympanitis.

**Bots** in the Horse.—The larvæ of *œstrus equi*, entering the horse's system during the summer months, are evacuated with the excrement the following spring, when signs of their existence in the fæces alarm, and remedies are sought. In a little time the bots will all pass out, and unless the animal be free in the fields again during the summer, no indication of bots will again appear. At most exhibit purgatives.

**BOWELS, Hæmorrhage from the.**—Mild purgatives; calomel; opium, 22, 25. If the loss of blood be very great, use acetate of lead, 24; nitro-muriatic acid, 185; catechu and kino.

**BOWELS, Invagination of the.**—Incurable, except by a great effort of nature.

**BOWELS, Obstruction of the.**—Purgatives; clysters.

**BOWELS, Wound of the.**—Carefully applied sutures, after that perfect quiet enjoined, with strict diet and periodical exhibition of opium.

**BRAIN, Congestion of the.**—Bleeding; cold applications to the head; revulsion to the extremities; purgatives.

**BRAIN, Inflammation of the.** See Phrenitis.

**BRAXY in the Sheep.**—Change of pasture. Great attention must be paid to rearing as regards the condition of animals. Protection from hoar-frost, damp, etc. When the disease presents itself use purgatives; stimulants; mineral acids.

**BROKEN KNEES.** See Arthritis.

**BROKEN WIND.**—Relieve by method of diet; purgatives; sedatives; camphor; digitalis; tartar emetic; arsenic; creosote.

**BRONCHIA, Worms in the.** See Phthisis Pulmonalis Verminalis.

**BRONCHITIS**—Inflammation of the Bronchia.—Apply

mustard poultice over the pectoral and lower thoracic region, or an active blister, 292, 293, 294, 295, 296 ; purgatives, 41, 65, 114, 119, 121 ; diuretics, 84, 85, 37, 79, 81, 82, 83, 87 ; sedatives, 127, 132, 233 ; hydrocyanic acid ; steaming the nostrils. In chronic bronchitis, use turpentine inhalations, 251. Demulcents should be freely administered.

**BRONCHOCELE—Goitre.**—Tonics—iron, quinine ; iodine internally ; ointment and tincture of iodine externally.

**BRUISES.**—Cold applications ; naphtha ; acetate of lead lotion ; tincture of arnica, 260 ; tincture of myrrh ; camphorated spirit.

**BURNS and SCALDS.**—May be produced by heat and caustic applications. When the result of hot water or other hot agent coming in contact with the skin, cold water should be applied, or ether containing a dose of acetate of morphia. After this the part should be enveloped in finely-carded cotton wool, which should be kept on four or five days, and if the wool adheres, poultices should be applied to favour its separation, or simple WATER DRESSING may serve. The vital powers must be supported by means of stimulants.

It has been recommended in burns to use stimulants both internally and externally—the spirit of turpentine being applied to the burn with the ultimate effect of producing a soothing sensation.

Caustics may produce effects precisely analogous to those resulting from hot applications. We must check their ravages by dilution with water in most instances, and by chemical decomposition in others. Thus, if nitric acid is the active agent, it may be washed off ; if sulphuric acid, the addition of water would increase its effects, so that lime or carbonate of soda, etc., should be immediately sprinkled over

the surface; if potassa fusa or quicklime be the active agents, their action may speedily be checked by the use of dilute acetic acid; insoluble and harmless acetates are formed.

**BURSÆ MUCOSÆ, Enlarged.** See Thoroughpin, wind-galls, etc.—Iodine and soap liniment; iodine ointment, 307; blisters, 292, 295; firing; acupuncture.

**CACHEXIA AQUOSA—Chlorosis—Rot in Sheep.**—Remove sheep from damp to dry pasture land, or on to a salt marsh; purgatives, 109, 119; diuretics—common salt, iron.

**CACHEXIA BOVM TUBERCULOSA.\*** See Phthisis.—In 1st stage it is recommended to give stimulants just before the act of copulation, to insure conception; others bleed, or prepare the animal by the exhibition of repeated doses of calomel. In the second stage give vegetable tonics aromatics, nutritious food, mineral tonics.

**CALCULUS.** See Stone.

**CANCER.**—Remove the malignant tumour if possible. Relieve pain if necessary by the use of narcotics, such as opium.

**CANKER IN THE EAR.** See Otorrhœa.

**CANKER OUTSIDE THE EAR.**—A cap should be used to fix the ear. An ointment of oxide of zinc may be applied locally.

**CANKER OF THE FOOT of the Horse—Paronychia Equi—**

\* This disease is very prevalent in cows, and presents itself first by symptoms of nymphomania and sterility, and next by general waste or consumption. After death large masses of tubercular deposit are observed beneath the parietal pleuræ and peritoneum.

**Panaritium Equi Erysipelatosum (*Hofmann*).**—Purgatives; diuretics and alteratives; cleanliness; dry litter or dry pasture; poultices containing animal charcoal; remove horny sole wherever it is detached; apply caustic dressings with pressure, exerted by means of pads of tow and broad iron plates fixed on to or above the shoes. The caustic dressings may contain sulphate of zinc in powder, sulphate of copper in powder, corrosive sublimate, nitric acid, 321. As soon as healthy horn forms, mild dressings should be used of pulverized acetate of copper. In treating canker avoid moisture, use considerable pressure on the parts, and vary the kind of dressing frequently.

**CAPPED ELBOW.**—Shorten the heels of the shoes, or place a circular pad over the fetlock to protect the elbow from inordinate pressure; use cold water, tincture and ointment of iodine; setons outside the enlarged bursæ, or excision of the sac.

**CAPPED HOCK.**—Iodine ointment; puncture tumour cautiously; apply pressure.

**CARBUNCULAR FEVER.**—Shelter; clean food and water; separation of animals; cold ablutions daily; purgatives; sulphate of magnesia or soda in solution, acidulated with sulphuric acid; tartrate of potash; yeast; common salt; nitre. Acids, such as the sulphuric or hydrochloric. When prostration supervenes give camphor; carbonate of ammonia; decoction of cinchona; iron; quinine.

**CARDITIS.**—Inflammation of the Heart. See Pericarditis and Endocarditis.

**CARIES OF BONE.**—Actual cautery; caustics; nitrate of silver.



**CATARACT.**—In early stage bleeding, purgatives, setons, and blisters near the head. In chronic cataract it is sometimes recommended to extirpate or depress the lens.

**CATARRH, Epidemic.** See Influenza.

**CATARRHUS NASALIS**—Nasal Catarrh—Nasal Gleet.—In its acute form, fumigate nostrils with hot bran mash containing vinegar; blister the throat; purge, or use diuretics. The abortive treatment may be adopted, which consists in injecting a lotion of sulphate of zinc into the nasal chambers. This, repeated daily for three or five days, will suffice to effect a cure. In chronic catarrh use tonics and stimulants, with astringent injections.

**CATARRHUS SINUM FRONTALIS ET MAXILLARIS**—Catarrh of the Maxillary and Frontal Sinuses.—Treated as simple nasal catarrh, but the sinus may be trephined, and a seton passed down from the frontal through the maxillary sinus. The sinuses may thus be injected with astringent solutions in a direct manner.

**CATARRHUS VAGINÆ.**—Catarrh of the Vagina, occurring especially in cows after parturition.—Purgatives—sulphate of soda. Diuretics—nitre; chloride of sodium. Clothe the animals warm, and excite cutaneous transpiration; astringent injections.

**CHANCER PLAGUE**—Chancrous Disease of the Genital Organs in Stallions and Mares.—Purgatives—aloes; calomel. Diuretics—turpentine; camphor. Apply astringents to ulcers—sulphate of zinc; nitrate of silver.

**CHEST, Dropsy of the.**—See Hydrothorax.

**CHICKENPOX.** See *Varicella Boum et Ovium*.

**CHLOROSIS.** See *Cachexia Aquosa*.

**CHOREA.**—Aperients; setons; vomic nut, 245, 249; strychnine, 247; iron, 246; nitrate of silver, 248; arsenic, 201.

**CHOKING.**—If the offending agent be in the pharynx it may be removed by the hand; if in cervical portion of the oesophagus, and consisting of impacted chaff, etc., exhibit warm water or oil, and by manipulation the material may be made to pass on. If a solid object remains fixed here, fluids may still be given, or the probang used; and lastly, oesophagotomy may be resorted to.

**CLEANSING IN CALVING.** See *Retentio Secundinarum*.

**COLIC, Flatulent.**—Purgatives; clysters; ammonia, 129, 134; assafoetida, 122, 123.

**COLIC,\* Spasmodic.**—Purgatives; aloes;\* clysters; warm fluids to drink; anti-spasmodics and sedatives rarely needed.

**COLIC, Verminose.**—Calomel or any drastic purge, and a dose of turpentine. In dog, steel enema. See *Worms*.

**COLICA PICTONUM—Lead Colic.**—Purgatives—calomel and opium. Opiates; simple clysters; anodyne enema.

**COMA—Sleepy Staggers.** See *Amentia*.

\* *Essay on Aloes and Clysters in Spasmodic Colic*, by Mr Joseph Gamgee, *Veterinarian*, 1855; also, *Essay on Colic*, by Mr John Gamgee, *Highland Society's Transactions*, 1857.

**COMPRESSION OF THE BRAIN**, in Case of Fracture.—Trephine and elevate pieces of bone ; bleed and purge.

**CONCUSSION OF THE BRAIN**.—Wait for reaction, and then bleed, purge, and use diffusible stimulants. Under special circumstances I have found warm baths and sedatives of use.

**CONGESTION**.—Abstraction of blood ; cold applications. Excite circulation by stimulants exhibited internally or applied externally.

**CONJUNCTIVITIS**.—Bleeding from the Angular Vein of the Eye in the Horse.—Scarify the inner side of eyelids ; purgatives ; sedative applications, 286, 287, 288, 289, 290, 291 ; cold water ; astringent collyria, 281, 282, 283, 284, 285.

**CONSTIPATION**.—Cathartics ; enemata, either simple or medicated, 252, 253.

In habitual constipation, light diet and exercise tend to relief. In horse the use of bran mash, and in cattle of linseed, is attended with beneficial effects. Sulphur is much to be recommended ; and for dogs the balsam of sulphur may be prescribed.

**CONSUMPTION**. See Cachexia Boum Tuberculosa.

**CONTRACTED FEET**.—Keep the horse without shoes for a while ; use poultices, fomentations, and hoof ointments. Many injunctions respecting shoeing might be laid down, but it is not our object, nor would it be possible, to discuss the subject here.

**CONTUSIONS**.—Apply cold water, or discutient lotions, 259 ; tinct. arnicæ, 260 ; camphorated spirit. If about

the fetlock or knees of horses, apply bandages, and protect the parts by appropriate shoeing, etc.

**CONVULSIONS.**—Cold affusion to the head. In dogs an emetic, 64, 66, 67; in other animals a purge; scarify the palate; use diffusible stimulants—ammonia, liquor arsenicalis.

**CORIAGO**—Ecedermia—Hidebound—Felon in Cattle.—Friction applied to the skin; purgatives; alteratives; diuretics; diaphoretics.

**CORYZA.** See Catarrh.

**CORYZA GANGRÆNOSA.\***—In the early stages bleed and purge; scarify local tumefactions; fumigate nostrils; exhibit nitric or nitro-muriatic acid, wine, cinchona, 54; quinine, 52.

**COUGH.**—Purge; blisters; sedative electuary, 204, 215; nitre, 212; camphor, 217.

**COW-POX.**—Warm the animals; mild aperients.

**CRACKS IN THE HEELS.**—Alteratives; keep heels dry and clean; use oxide of zinc ointment, acetate of copper; glycerine; carbonate of lead ointment.

**CRIB-BITING.**—Incurable. Can only be prevented by compressing throat with strap, or keep horse from any prominent object, such as the manger, on which he can seize.

\* This is one of the diseases that has been taken for purpura hæmorrhagica. It consists in inflammation of the mucous membrane of the nose, with great debility and petechiæ on the pituitary membrane and conjunctiva. The upper lip and fauces much swollen.

**CROUP.\*—I. CATARRHAL CROUP**—Stridulous Laryngitis.—Emetics in animals that can vomit; bleed; purge; blisters, or active rubefacients. In second stage, stimulating expectorants, such as assafoetida, carbonate of ammonia.

**II. PSEUDO-MEMBRANOUS CROUP**.—Treatment in first stage as for catarrhal croup. In second stage, or as soon as false membranes are formed in the trachea, it has been recommended by Delafond to blow calomel into the air-passage through an opening made into the trachea. Nitrate of silver may be used in the same way, or best applied in solution with a sponge on a whalebone probe. Tracheotomy must be had recourse to, if death by suffocation be threatened. Calomel; potassio-tartrate of antimony; iodide of potassium.

**CRUSTA LABIALIS**—Scabby Eruptions on upper-lip in suckling animals.—Alteratives. Astringents—oxyde of zinc, 271; sulphate of copper; rhatany.

**CYNANCHE**. *Cynanche Carbuncularis*.—Malignant Sore Throat of the Pig.—Emetics; clysters; mineral acids; saline diuretics; cold ablutions daily; inhalation of hot water vapour. See Angina.

**CURB**—Sprain and Rupture of the Calcaneo-Metatarsal Ligament.—Rest; high-heel shoe; cooling lotions; cold fomentations; iodine ointment; liniment composed of two parts of soap liniment and one of tincture of iodine. The idea that blistering and firing a curby hock strengthens it is quite erroneous. Blisters may be useful if there be much thickening.

**CYSTITIS**—Inflammation of the Bladder.—Venesection;

\* This affection prevails in calves; but it is seen in dogs, cats, swine, and indeed in all animals.

purgatives; calomel; opium; warm fomentations; mustard blisters to the loins; warm demulcent clysters; anodyne enemata, 254; linseed-tea.

In chronic cystitis, or when there is catarrh of the bladder—*cystirrhœa*—sedatives, such as hyosciamus, should be used at first; and next, Venice turpentine, 35; creosote, 125; mineral acids.

**DIABETES.**—*D. Insiptidus* in the Horse. See Diuresis. *D. Mellitus* in Cattle and Sheep.—Aperients. Tonics—sulphate of iron; iodide of iron. To diminish secretion of urine, use opium, 178; diaphoretics—carbonate of ammonia, 198; astringents, 156, 166; creosote, 125; iodide of potassium, 126; carbonate of lime; linseed-tea.

**DIAERHŒA.**—In suckling animals, change the food of the mother, and administer purgatives with opium and white of egg; lime-water; antacids—carbonate of soda, magnesia; sedatives; astringents, 90, 95, 155, 159, 162, 163; astringent enemata. Astringent mixtures may be given three or four hours after an oleaginous purgative.

In adult animals, attend likewise to food; mild purgatives with opium; astringents, 18, 19, 20, 21, 22, 23, 25, 26, 27, 28, 89, 91, 92, 93, 94, 150, 151, 154, 156, 158, 160, 161, 164, 225, 226, 239, 240, 242; anodynes.

**DIPHThERITIS**—Pseudo-membranous Inflammation of the Fauces. See Croup.

**DISLOCATIONS.**—Reduction by extension and counter-extension. Bones retained by splints and bandages. If inflammation is set up, apply cold fomentations, and adopt local antiphlogistic means.

**DISTEMPER**—Catarrhal Fever of Dogs.—Febrifuges—

grey powder, 68. Emetics—white hellebore, 71; tartar emetic, 66. Light, but nutritious diet, unless violent symptoms of fever set in. Purge—confectio sennæ; syrup of buckthorn. According to symptoms, use opium; hyoscyamus, 139, 171; digitalis, 84; squills; camphor, 139; arnica, 140; valeriana, 141; nux vomica, 245, 249; strychnine, 247; nitrate of silver, 248; nitre, etc., 234; sulphate of zinc, 241; iron, 246, 250. Externally, apply blisters, setons, especially if nervous symptoms supervene.

DIURESIS—Diabetes Insipidus of the Horse.—Change of food; iodide of potassium, 126; camphor and opium; creosote, 125; carbonate of soda; linseed-tea.

DROPPING AFTER CALVING. See Adynamia Nervosa Generalis—Parturient fever.

DROPSY. See Ascites, Hydrothorax, etc.

DROPSY OF THE WOMB. See Hydrometra.

DYSENTERY.—Calomel and opium; nitrate of silver; alum and sulphate of zinc; nitro-muriatic acid; turpentine; tannin.

DYSENTERIA ENZOOTICA\*—Gastro-Enteritis Enzootica—*Wood Evil*—Braxy—Maladie des bois of the French authors.—Change food; oleaginous purgatives; clysters; demulcent draughts, 150. In asthenic variety, use camphor, 147; mineral acids.

DYSENTERIA EPIZOOTICA—Epizootic Dysentery of Cat-

\* This is a form of the Black Water which occurs in the vicinity of woods. It affects horses, cattle, and sheep.

tle.—Opium, 148, 150; aconite, 127; mustard poultices to abdomen; astringents, 156, 169, 170; arnica, 149.

**DYSENTERIA NEONATORUM**—White Skit in Calves and Lambs.—Magnesia, 142; chalk, 155, 162; opium; astringents.

**DYSPNŒA**—Roaring—Whistling.—In early stages, use antiphlogistics, counter-irritants, and sedatives. A roarer may be relieved and his usefulness increased by pressing on the false nostrils with two pads.

**DYSURIA**—Suppressed or difficult Discharge of Urine.—Sedative clysters; hyoscyamus; camphor and opium, 128; oil of turpentine; sulphate of potash, 137.

**ECLAMPSIA.** See Convulsions.

**ECZEMA**.\*—Gentle purgation; opium; extract of hyoscyamus and ipecacuanha; mineral acids; arsenic, 191; Fowler's solution, 201.†

*Local Treatment.*—Glycerine; tincture of iodine; nitrate of silver lotion; alkaline solutions, 266.

**ECZEMA EPIZOOTICA.** See Aphtha Epizootica.

**ECZEMA RUBRUM.**—Red Mange. See Eczema.

**ELEPHANTIASIS**—Leprosy, according to Youatt.—Purgatives, especially sulphur; alteratives, such as arsenic; iodide of potassium; externally, rubefacient liniments.

\* Very prevalent in dogs.

† I have observed the best effects in the treatment of Eczema Rubrum and Impetiginodes from the use of Fowler's solution, and lotions containing carbonate of soda or potash.



ENCEPHALITIS. See Phrenitis.

ENDOCARDITIS—Inflammation of the Endocardium.—Bleeding; purgatives; blisters; aconite, 127; opium, 181; digitalis, 30; nitre, 212; sulphate of soda, 214.

ENTERIC FEVER—Abdominal Typhus in the Horse.\*—Moderate bleeding; arnica; camphor; mineral acids; counter-irritants; cold ablutions; clysters containing vinegar.

ENTERITIS—Inflammation of Bowels.—Bleed; purge with aloes; calomel; clysters; hot fomentations; mustard; opium; tincture of aconite, 127; tobacco smoke enemata.

ENURESIS—Incontinence of Urine.—Anodyne enema—oil of turpentine; cantharides, 33.

EPHEMERA—Transitory Fever of but one day's duration.—Clysters; nitre; a mild purgative.

EPILEPSY—Meagrimis.—During the fit no treatment. In the intervals between the fits use purgatives. If the animals are anæmic administer tonics—nitrate of silver; sulphate of zinc, 47; acetate of lead.†

EPISTAXIS—Hæmorrhage from the Nose.—Cold water

\* Enteric fever, typhoid in the horse, has been recently spoken of as of very common occurrence in some parts on the Continent of Europe.

† Horses affected with meagrimis have fits more especially during the summer, when driven or ridden on a sunny day. The fit may in this case be prevented by a sponge containing cold water being adapted to the forehead. This has often been done with effect. Horses subject to meagrimis may be permanently relieved by working them with a pipe collar or breastplate, so as to prevent pressure on the veins of the neck.

or ice to head and body; tannin; astringent injections—vinegar, alum.

**EQUINIA.** See Glanders.

**ERYSIPELAS.**—A brisk cathartic, and sometimes bleeding. Diaphoretics, such as hydrochlorate and acetate of ammonia; opium; calomel; diuretics, 34, 35, 36, 37, 38. Use locally blisters or tincture of iodine; deep incisions, or simple scarifications.

**EXANTHEMATA.** See Herpes—Prurigo—Urticaria—Morbilli, etc.

**EXOMPHALUS**—Umbilical Hernia.—Apply clams or ligature over the skin constituting the hernial sac. Nitric acid to cauterize and induce contraction of skin.

**EXOSTOSIS**—Tumours of Bone.—Subcutaneous periosteotomy; sheet-lead lining to a leather boot, fitted to the part, for bony tumours on the canon; blisters; preparations of iodine; mercury; actual cautery; potential cautery.

**FALSE QUARTER.**—A lesion of hoof, due to solution of continuity of the secreting structures, hence incurable. A bar shoe is useful in most cases.

**FARDEL BOUND**—Impaction of the Third Stomach in Cattle.—Purgatives, linseed and croton oil; croton seeds; clysters; low diet; stimulants, 147; ammonia, 129; large draughts of warm fluids, in which small doses of sulphate of magnesia are dissolved.

**FARCY.**—Brisk purges. Mineral tonics—sulphate of

copper, 47; diiodide of copper; sulphate of iron, 48; iodide of mercury. Mineral acids. Arsenic, 46. Cantharides. Apply blisters to farcy buds; acetum cantharides; iodine ointment; binoxide of mercury ointment; bromide of potassium, 308; actual cautery. When pustules open, use solution of chloride of lime, black wash, nitric acid, nitrate of silver.

**FEVER, Hectic.** See Hectic Fever.

**FEVER, Irritative.**—Bleeding; clysters. Purgatives—calomel and opium; nitre; diaphoretics.

**FISTULA.**—Open with knife; use actual cautery; astringent injections; setons.

**FLATULENT COLIC.** See Colic.

**FLOODING.**—Empty the uterus; if placenta be retained, remove it by force; place the animal's fore feet much lower than the hind ones; use cold water over loins, and in the shape of clysters or injection into the vagina; excite contraction of uterus by ergot of rye, 98; exhibit astringent mixtures; sesquichloride of iron, 167; sulphuric acid, 165; gallic acid, 166; use cold acidulated draughts.

**FOOT ROT in Sheep**—Paronychia Ovium.—Purgatives; poultice containing animal charcoal; astringents, 319, 320, 322; keep animals on dry soil.

**FOUL in the FOOT.** See Panaritium.

**FOUNDER.** See Laminitis.

**FRACTURES.**—Reduction of fractures; starch band-

ages; \* splints of leather, wood, or iron; special apparatus for various fractures.

GALL STONES. See Biliary Calculi.

GANGRENE.—Check its progress by antiphlogistic means. Support system during reparation of dead parts by stimulants—wine, beer, ammonia, camphor, 147; tonics—vegetable, such as bark, gentian, etc.

Local treatment consists in use of disinfectant lotions—chloride of zinc.

GASTRITIS.†—Bleeding; calomel and opium; clysters; sedatives; hydrocyanic acid; tincture of aconite, 127; blisters; mustard poultices and ammonia externally.

GASTRO-ENTERITIS. See Dysentery.

GID IN SHEEP. See Hydrocephalus Hydatideus.

GLANDERS—Equinia. —Horses undoubtedly affected with this dreadful malady should be destroyed as soon as the disease is satisfactorily diagnosed. Various mineral tonics, especially sulphate of copper, arsenic, and iodide of iron, have been vaunted as specifics. The animal tonic cantharides has proved useful, and various mineral alteratives; but we cannot conceive on what principle animals should be allowed to live, endangering the life of those around them, with no benefit to themselves. See Farcy.

\* For the proper method of applying starch bandages, see Advantages of the Starched Apparatus. By Joseph Sampson Gamgee. London, 1853.

† This affection has been peculiarly prevalent amongst dogs of late.

**GLOTTIS**, Edema of the.—Purgatives; scarifications in the region of the throat; astringent electuaries, 216, 218; tracheotomy if suffocation be threatened;\* blisters to the throat; poultices; setons.

**GOITRE.** See Bronchocele.

**GONORRHOEA.**—Astringent injections; copaiba balsam; oil of turpentine.

**GREASE IN HORSES**—Paronychia Equi Erysipelatosum.—Alteratives, 1, 2, 5, 7, 39; diuretics, 34. Locally, poultices containing animal charcoal; excision of fungoid granulations; use of tar and nitric acid, 321; sulphuric acid, 319, 322, 325; sulphate of copper; nitrate of silver; acetate of copper, 304; actual cautery.

**GRIPES.** See Colic.

**GROGGINESS.** See Navicularthritis.

**GUNSHOT WOUNDS.**—Extraction of foreign bodies; relief of parts by incisions; cold water irrigations, etc.

**HÆMATEMESIS†**—Hæmorrhage from the Stomach.—Rest; cold acidulated draughts; astringents, such as alum, gallic acid. Oil of turpentine has been extolled.

**HÆMATURIA**—Hæmorrhage from the Mucous Mem-

\* It should ever be borne in mind, that when symptoms of suffocation are urgent, and due to obstruction in the larynx, the trachea should be opened without delay.

† Hæmatemesis is frequent in dogs, and has been spoken of by Rychner as occurring in cattle.

brane of the Urinary Passages.—Astringents, 23, 24; sulphuric acid, 165, 173; tincture of the sesquichloride of iron, 167; oak bark, 22; tannic acid, 27; gallic acid, 166; acetate of lead, with extract of henbane or opium. In some instances, purgatives, counter-irritants, and the use of turpentine.

**HÆMOPTYSIS**—Hæmorrhage from the Lungs.—Venesection; acetic acid fumes; decoction of oak bark; acetate of lead, 24; gallic acid, 166.

**HÆMORRHOIDS**—Piles.—Mild purgatives; aloes; bitartrate of potash; sulphur. *Local treatment*—Clysters; scarifications; excision; belladonna; liquor plumbi diacetatis, 264; tannin; hot water.

**HÆPATITIS**.—As means of prevention enjoin exercise; occasional laxatives; salines. When effusion of blood occurs it may benefit to give astringents and opium.

**HEART, Atrophy of**—Often unsuspected.—Diet; purgatives; tonics.

**HEART, Hypertrophy of**.—Ether; digitalis.

**HECTIC FEVER**.—Exercise; cleanliness of skin and cold ablutions; nutritious, but light and easily digested food. Vegetable bitters—rhubarb, 186; gentian; cinchona, 54; oak bark; ginger. Mineral tonics, 46, 47, 49.

**HELCOSIS**.—Farcy.

**HEMIPLEGIA**.—Bleeding; active purgatives, 40, 44, 110, etc.; strychnia, 55, 245, 247; arsenic, 46.

**HEPATITIS.**—Venesection; purgatives; blisters, 292, 294, 296; calomel, etc., 61, 62, 203, 204; salines, 146, 205, 206; copaiba, 157; opium; sulphate of potash. In the asthenic form, camphor and oil of turpentine; nitromuriatic acid.

**HERNIA.**—Attempt reduction by manipulation, and, if unsuccessful alone, try warm fomentations or warm bath, ice, and the use of chloroform. If this be unsuccessful, relieve strangulation by dividing the stricture. After the operation, exhibit a purgative, and then keep the animal quiet.

**HERPES, or Tetter.**—Exercise; regulate diet; mild purgatives; oxide of zinc ointment.

**HIDEBOUND.** See Coriago.

**HIGHAM STRIKING**—Blood Striking in Sheep. See Splenic Apoplexy.

**HOVEN.** See Tympanitis.

**HYDATIDS.**—The *cœnurus cerebralis* is met with in the brains of sheep and oxen, constituting sturdy, turnsick, gid, etc. The *echinococcus veterinorum*, in all parts of the bodies in our domestic animals. The *cysticercus cellulose* infests the pig, being met with in the cellular tissue in measles. *Hydatids* may be prevented by curing or preventing tapeworm in other animals, especially man and dog. The hydatids spring from the ova of the tænia. Measles in the pig is incurable, like most hydatigenous affections, but gid or sturdy may be cured by trephining the cranial bones, and effectually removing the hydatid. Flocks managed without dogs are quite free of the disease,

and, as hydatids only develop in the young sheep, dogs may mix with sheep with impunity when the latter are upwards of two years old.

**HYDRARTHROSIS**—Effusion in and around Joints—Bog Spavin—Windgalls—Thoroughpin, etc.—Bandages; oil or ointment of cantharides; tartar emetic ointment; ointment of the binocide of mercury; compound iodine ointment; setons outside; enlarged bursæ; firing.

**HYDROCELE** — Dropsy of the Scrotum. — Tapping; iodine (injection); setons; acupuncture.

**HYDROCEPHALUS, Acute.**—In young animals, especially calves,\* cautious diet; purgatives; digitalis; mercury; iodine; ol. terebinthinæ (enema); cold to the head; setons.

**HYDROCEPHALUS, Chronic.** — Purgatives; calomel; iodide of potassium; tartar emetic; blisters; setons.

**HYDROCEPHALUS HYDATIDEUS.** See Hydatids.

**HYDROMETRA**—Dropsy of the womb.—In non-pregnant animals, evacuate the womb through the os uteri by dilating the latter and passing a tube into the womb. By compressing the wall of the abdomen the fluid may be made to escape, especially if the animals are laid on their back. Tincture of iodine should be injected into the womb. Puncture the uterus with a trochar midway between ribs and stifle.† Give calomel, 4, 61, 62, 63; digitalis, 33, 37, 79; oleum terebinthinæ; iodide of potassium, 183; nitre, 81, 83.

\* See Hering, *Specielle Pathologie*, 1849.

† Cartwright's *Veterinarian*, 1847.



The *liquor amnii* may exceed its natural quantity, and cause pregnant animals to be inordinately distended. It cannot be cured. The animals must be supported by tonics.

**HYDROPERICARDIUM.**—Calomel, 62; iodide of potassium, 76; setons; blisters.

**HYDROPHOBIA**—Rabies Canina, Prevention of.—Apply caustics to bite, such as nitrate of silver; actual cautery. Once developed, it is incurable. As palliatives use belladonna; vapour bath; venesection.

**HYDROPS.** See Dropsy.

**HYDROPS OVARII.**—Iodine, 182; iodide of iron, 243, 249; calomel; blisters; issues.

**HYDROPTHALMIA**—Dropsy of the Eye.—Tapping; nitrate of silver locally, 281, 284; diuretics; tonics.

**HYDROTHORAX**—Water in the Chest.—*Digitalis*, 33, 37, 79; calomel, 3, 4, 62; nitrate of potash, 34, 37, 80, 83; *oleum terebinthinæ*; iodide of potassium, 183; tapping repeatedly; blisters; setons. Tonics, such as iron, 50, 53, 219; arsenic, 46, 193.

**ICTERUS.** See Jaundice.

**IMMOBILITY** of French authors. See Amentia.

**IMPETIGO.**—*Liquor arsenicalis*, 201; iodide of potassium; nitric acid. External applications—Nitrate of silver lotion; sulphate of copper; iodine, 307; tar and sulphur, 297; oxide of zinc, 271; dilute solution of sulphuric acid; strong solution of acetic acid; iodide of sulphur.

**IMPOTENCE.**—Cantharides; ergot of rye in small doses; nux vomica.

**INCARCERATED HERNIA.** See Hernia.

**INDIGESTION, Acute.** See Stomach Staggers.—Aloes, 41, 44; croton, 40, 110, 112; Epsom salts, 113; clysters; in ox, draughts of tepid fluid, with spirits of nitric ether, ammonia, aromatics, and frequent hand rubbing over the region of the rumen.

**INDIGESTION, Chronic.**—Aloes; calomel; sulphur; vegetable bitters; stimulants.

**INFLAMMATION.**—Antiphlogistic regimen. Bleeding. Cathartics—aloes; calomel; sulphate of magnesia; castor oil; senna; diuretics; diaphoretics; emetics; sedatives—aconite, 127; opium, 128, 131; belladonna, 132; henbane, 139. Alteratives—mercury. Refrigerants and demulcents; vinegar, bitartrate of potash, nitrate of potash, decoction of barley, linseed gruel, water. Poultices; mustard; blisters. *Superficial Inflammation*—Alcohol; ice; refrigerating lotions, 279, 280; cataplasms; nitrate of silver, 272; sulphate of zinc, 276; diacetate of lead and opium, 264; liquor potassæ; hydrocyanic acid, 265, 266.

**INFLUENZA.**—Mild purgatives, 204; clysters; calomel; nitre; potassio-tartrate of antimony, 69; sulphate of soda, 205, 206, 212; carbonate of potash; borate of soda, 209; sulphate of potash; vinegar in the water the animals drink; liquor ammonia acetatis, 132; spirit. etheris nit.; opium; colchicum; camphor, 216, 217.

**INSECTS, PARASYTIC.**—I. Aptera—Wingless Insects.—*a.* Pediculus, louse of horse, ox, calf, sheep, goat, pig, and

dog; *b. Pulex*—flea of dog, cat, etc.; *c. Trichodectes* of dog, goat, ox, horse, sheep, and cat. II. *Diptera*—*d. Œstrus*—Bot—*Œstrus Equi*. See Bots, *Œstrus bovis*, *Œstrus ovis*.

Parasytic insects are sometimes injurious. Lice are kept away by simple cleanliness, and fleas are prevented by rubbing oil of aniseed, or sprinkling the Persian flea-powder on the skin. No treatment avails in effecting the removal of Bots from a horse's stomach before the natural period for their exit. The *Œstrus bovis* deposits its germs in the skin of the ox; see Warbles. The larvæ of *Œstrus ovis* become lodged in the sinuses of the head, and are removed by inhalations, etc.

*Arachnida*.—Several genera of the *Arachnida*, order *Tracheata*, exist on animals and vegetables. The first genus, the Ticks, *Ixodes*. *a. The Dog Tick, Ix. ricinus*, from 3 to 6 lines in length; it exists in woods and attaches itself to the dog's skin. *b. The Ox and Sheep Tick, Ix. elegans*, from 5 to 6 lines in length. Ticks are active creatures, which dig their suckers into the skins of animals and propagate rapidly. Dogs may be protected by being washed with a mild solution of corrosive sublimate or arsenic, oil of aniseed, etc. Sheep may be cleared of them by mercurial ointment, common turpentine, and linseed oil.

The second genus of mites, *Acari* or *Sarcoptes*, which burrow in the skin, including the following species:—

- |                            |                          |
|----------------------------|--------------------------|
| 1. <i>Acarus hominis</i> . | 4. <i>Acarus canis</i> . |
| 2. „ <i>equi</i> .         | 5. „ <i>cati</i> .       |
| 3. „ <i>suis</i> .         | 6. „ <i>caniculi</i> .   |

To this genus belongs

7. *Acarus rupicaprae* (Hering).
8. „ *dromedarii* (Gervais).

The third genus, *Dermatodectes*, that simply bite and hold on to the skin. Amongst which we have—

1. *Dermatodes equi*.
2.     ,,     *bovis*.
3.     ,,     *ovis*.

The fourth genus, *Symbiotes*, living together in large numbers, and not piercing farther than the cuticle in search of food :—

1. *Symbiotes equi*.
2.     ,,     *bovis*.

To this genus also belongs

*S. Elephantis*.

Closely allied to these animals we have the *Demodex folliculorum*, found in man, horse, and dog, and which probably exists in association with torpidity of the sebaceous organs in all animals. For the treatment of cutaneous parasitic diseases, see *Scabies*.

**INTERMITTENT FEVER.**—Aloes ; roasted coffee in 1 or 2 ounce doses ; wine ; ammonia ; quinine ; sulphuric æther.

**INTUSSUSCEPTION of the Bowels.**—Opium, to allay irritation and stop peristaltic action. It is usually fatal.

**IRIS, Hernia of.**—Belladonna, 287 ; atropine, 290.

**IRITIS**—Bleeding from Angular Vein.—Belladonna, 287, 291 ; atropia, 290 ; calomel, 4, 62 ; purgatives ; setons ; nitrate of silver, 281.

**ISCHURIA.** See *Dysuria*.

**JAUNDICE.**—Aloes ; calomel, 3, 4, 44, 62 ; clysters ; nitro-muriatic acid, 185 ; assafœtida ; turpentine, 176.

**JOINT FELON.** See *Rheumatism*.

**JOINTS, Chronic Diseases and Enlargements of.**—Ung. canth., 292; ung. hydrargyri, 262; ung. hydrarg. biniodidi; ol. canth.; ol. tiglli externally; ol. terebinth., 261, 270; setons; actual cautery.

**JOINTS, Scrofulous Diseases of.**—Iodine, 262, 307; chloride of sodium; iron.

**JOINTS, Effusions into.** See Hydrarthrosis.

**JOINTS, Inflammation of.** See Arthritis—Synovitis.

**JUGULAR VEIN, Inflammation of.** See Phlebitis.

**KIDNEYS, Hæmorrhage from.** See Hæmaturia.

**KIDNEYS, Inflammation of.** See Nephritis.

**KIDNEYS, Irritable states of.**—Warm fomentations over loins; poultices; warm clysters.

**KINEPOCK.** See Vaccina.

**LAMPAS—Turgescence of Palate.**—Scarifications; purgatives; salines, 205, 206.

**LAMINITIS, Acute.**—Blood-letting general and local, but not from toe; warm fomentations; poultices; aloes; calomel and opium; nitre; bitartrate of potash. The horse should be supported in slings, and from the first should be relieved of his shoes. *Chronic*—Cold applications; blisters to coronet.

**LARYNGITIS, Acute.**—Mustard poultice; vinegar; oil and ointment of cantharides; soap liniment, 259; belladonna

electuary ; camphor, 217 ; low diet ; clysters ; purgatives ; warm clothing ; nitre, 212 ; tartar emetic, 206 ; bitartrate of potash ; blood-letting ; hot water vapour. See Angina.

**LARYNGITIS, Chronic.**—Ointment of cantharides ; aloes ; calomel ; belladonna electuary ; setons.

**LEAD PALSY.**—Strychnia ; iodide of potassium ; electricity.

**LEG EVIL IN SHEEP.** See Typhus—Malignant Anthrax.

**LEUCORRHEA.**—Turpentine, 176 ; gentian ; oak bark ; ginger. Injections of lime water ; alum, 277 ; sulphate of zinc ; creosote and savin, 278.

**LICE.** See Insects.

**LICHEN.**—Blood-letting ; iodine. Externally—washing with soap, iodine, carbonate of potash.

**LIENTERIA**—Lientery—White Skit of Calves and Lambs. See Diarrhoea.

**LIENITIS**—Inflammation of Spleen.—Antiphlogistic treatment—Blood-letting, purgatives, blisters to left side of abdomen.

**LIPS, Scabs on.** See Crusta Labialis.

**LIVER, Inflammation of.** See Hepatitis.

**LIVER, Functional Derangement of.**—Aloes ; calomel ; camphor ; sulphate of potash.

LOCK-JAW. See Tetanus.

LOUPING-ILL. See Tabes Dorsalis.

LIVER, Softening of—*Rammolissement*.—Blood-letting; calomel; fresh air and exercise; copaiba, 157.

LUMBAGO—Pain in the Loins—Chiefly affects Cows.—Nitre; camphor; warm clothing over the loins; hand-rubbing; lin. ammoniæ; lin. terebinthinæ; clysters; a charge over the loins.

LUMBRICI. See Worms.

LUNGS, Apoplexy of the.—Blood-letting freely employed and at once; mustard poultice; strong ammonia rubbed on sides of chest; friction and blisters to extremities.

LUNGS, Emphysema of the.—If dyspnœa be severe, abstract blood; opium, 131; ether, 132; ammonia, 134.

LUNGS, Gangrene of the.—Nitro-muriatic acid, 185; carbonate of ammonia; wine; chloride of lime; gentian; oak bark; creosote; opium; belladonna, to allay cough.

LUNGS, Hæmorrhage from the. See Hæmoptysis.

LUNGS, Inflammation of the. See Pneumonia.

LYMPHANGITIS. See Angioteleucitis.

LYMPHATIC GLANDS, Enlargement of.—Iodine, 262, 307; iodide of potassium, 263; ung. hydrargyri biniodidi; ung. iodini comp.; excision.

**MAD STAGGERS.** See Acute Indigestion—Lead poisoning.

**MADNESS, Canine.** See Rabies.

**MAGGOTS ON SHEEP.**—Ol. terebinthinæ; tar and oil, 257; sol. of corrosive sublimate; arsenious acid; sulphate of zinc, 316; potash.

**MALACIA IN THE OX**—Cachexia Ossifraga.—Lime water; potash; gentian; bark; alum; sulphate of iron; chloride of sodium; hydrochloric acid.

**MALIGNANT SORE THROAT.** See Cynanche Maligna.

**MALLANDERS.**—Purgatives; bandages; charcoal poultice; solution of corrosive sublimate; acetate of lead, 264; sulphate of zinc; oxide of zinc; compound lead liniment.\*

**MAMMA, Induration of.**—Lin. ammoniæ; lin. terebinthinæ; iodine, 307; iodide of lead.

**MAMMITIS**—Mastitis, Inflammation of the Mammary Gland.—Blood-letting; cathartics; nitre; vinegar; liq. amm. acetatis; support mammæ; fomentations; poultices; paint with tincture or solution of belladonna; camphor ointment, 300; tincture and ointment of iodine, 307.

**MAMMÆ, Suppuration in.**—Belladonna poultice; lin. ammoniæ; tincture of iodine. If sloughing occurs, use astringents and caustics; zinci sulph.; argenti nitr.; nitric acid.

\* The compound lead liniment is composed of equal parts of olive oil, tincture of benzoin, and diacetate of lead.



**MANGE.** See Scabies.

**MANGE, Red.** See Eczema—Impetigo.

**MANIA.**—Symptoms of madness may be due to worms in the intestines—then treat for worms. Under other circumstances it is incurable.

**MANIA PUEPERALIS.**—In the cow after parturition, from suppressed secretion of milk, perspiration, etc., there may be signs of mania, to be treated by purgatives; calomel; arnica and ether; blisters along the spine, etc.

**MARASMUS SENILIS.**—The decay of old age is attended with disturbed balance of function, and this may be favourably influenced by proper management, such as relieving cough, convulsive attacks, constipation, etc.

**MASTITIS.** See Mammitis.

**MAW WORM** — *Ascaris Vermicularis*.—Injections of quassia infusion; internal exhibition of infusion of Indian pink, powdered glass, santonicum.

**MEAGRIMS.** See Epilepsy.

**MEASLES.** SEE Rubeola.—In the pig, by measles is understood the condition arising from the cysticercus cellulose infesting the body. It is incurable. See Hydatids.

**MECONIUM, Retention of**—Frequent in Foals.—Use clysters; purge the dam.

**MELANOSIS.**—Removal of tumours. There is often recurrence.

**MENINGITIS.**—Blood-letting ; cathartics ; clysters ; calomel, 4, 63, 64 ; salines, 75, 80, 82, 212.

*External Applications*—Vinegar ; ice refrigerants, 279, 280 ; blisters.

**MENORRHAGIA**—Uterine Hæmorrhage. See Flooding.

**MERCURIAL ERETHISM** in the Horse, Ox, etc.—Sesquicarbonate of ammonia ; camphor, etc., as stimulants.

**METRITIS**—Inflammation of Uterus.—*Acute*—Blood-letting ; purgatives ; nitre ; sulphate of soda ; warm clysters ; camphor ; opium. In the cow apply a blister over the right side of abdomen. In low or torpid form give valeriana, arnica. *Chronic*—Injections of vinegar ; savin ; vegetable and mineral tonics.

**METORRHAGIA**—Flooding.

**MILK**, Deficient Secretion of.—See Agalactia.

**MILK ABSCESS.** See Mamma, Suppuration of.

**MILK FEVER**—Febris Lactea. See Adynamia Nervosa Generalis, and Apoplexy, Parturient.

**MILK SICKNESS** in Cattle—Trembles.\*—Purgatives ; stimulants.

**MISCARRIAGE.** See Abortion.

**MOLTEN GREASE**—An old expression for Dysentery, which see.

\* A disease enzootic in the western states of Alabama, Indiana, and Kentucky, attributed to the food or water.

MOON BLINDNESS—See Ophthalmia.

MORBILLI. See Rubeolæ.

MORBUS BRIGHTII. See Albuminuria.

MORBUS RUBER OVIUM—Dysenteria Enzootica, which see.

MORTIFICATION. See Gangrene.

MUSCLE, Inflammation of. See Myositis.

MYELITIS. SPINITIS—Inflammation of the Spinal Marrow. — Blood-letting; purgatives; stimulants; blisters. Strychnia by the endermic method in the chronic stage.

MYOSITIS—Inflammation of Muscle.—Rest; laxatives; diuretics; friction; soap liniment; oleum terebinthinæ.

NAVICULARARTHRITIS — Navicular Disease. — Antiphlogistic measures—Poultices; cold fomentations; hoof ointment, 309; in rare cases, blisters at the coronet; rest. To render animals useful when incurably affected, perform neurotomy.

NEBULA—Slight opacity of cornea. See Albugo.

NECROSIS.—Remove dead bone by surgical operation, or favour its separation by encouraging discharge and ulceration; astringent injections; caustics.

NEPHRITIS.—Blood-letting; cathartics; aloes; warm clysters; hot sheep-skin over the loins or hot fomentations; mustard poultice, or tartar emetic ointment; calomel, 62;

potassio-tartrate of antimony, 69; linseed-tea, or gum emulsion in small quantities; copaiba; camphor and opium.

**NETTLE RASH.** See *Urticaria*.

**NEURITIS**—Inflammation of a Nerve.—Antiphlogistic measures; scarifications in the vicinity; actual cautery applied to the skin.

**NOSTRILS.**—Bleeding from; see *Epistaxis*.—Discharge from; see *Catarrh*—*Ozoena*.

**NYMPHOMANIA.**—Bleeding; purgatives; camphor, in large doses, with or without nitre. Cows should be spayed.

**OBSTRUCTION** of the Intestines. See *Constipation*.

**ŒDEMA.**—Exercise; hand-rubbing; bandages; scarifications; laxatives; diuretics; nitre, 5, 34, 36; digitalis, 37. See *Anasarca*—*Dropsy*.

**ŒSOPHAGUS VENTRICOSUS.**—Dilated œsophagus is seen in horses that crib-bite, and that habitually regurgitate food from the stomach. Incurable.

**OOPHORITIS**—Inflammation of Ovaries.—Blood-letting; purgatives; blisters to loins; saline substances. If chronic, the ovaries should be removed, if possible.

**OPACITY** of Cornea. See *Albugo*.

**OPACITY** of Crystalline Lens or its Capsule. See *Cataract*.

**OPHTHALMIA, External.**—*Pustular*—Nitrate of silver, 281; red precipitate ointment. *Catarrhal*—Rest; low diet; purgatives; fomentations; and in second stage, astringent collyria, 284. *Erysipelatous*—Aloetic purge; bichloride of mercury collyria, 288; opium, 288, 289. *Rheumatic*—Bleeding; calomel; tartar emetic; blister or seton on cheek or neck; friction over the orbit with mercurial and belladonna ointment.

**OPHTHALMIA INTERNA.**—Bleeding from facial vein; evacuation of accumulated pus from anterior chamber; collyria, 286, 284. *Epizootic Form*—Astringent collyria; nitrate of silver; bichloride of mercury.

**ORCHITIS.**—Bleeding; purgatives; calomel and opium, so as to induce salivation. *Locally*, warm fomentations; poultices; the scrotum must be suspended; belladonna solution externally; mercurial or iodine ointment in chronic stage.

**OTITIS.**—Purgatives; blisters to neck; low diet.

**OTORRHOEA**—Canker in the Ear of Dogs.—Inject with solutions of diacetate of lead and opium, etc.; sulphate of zinc; bichloride of mercury (mild); dilute solution of hydrochloric acid; blister behind the ear; and in old cases, introduce a seton, and use weak solution of nitrate of silver. The head should be enveloped in a cap to prevent the dog shaking.

**OVARITIS.** See Oophoritis.

**OZOENA.** See Catarrh.—Injection of nose with solution of chloride of lime; sulphate of zinc, 276; liquor sodæ chlorinatæ.

**PALPITATION of the Heart.**—Aloes and bitartrate of potash, 43; ext. hyoscyami; asafoetida; digitalis; warm and anodyne clysters.

**PALSY.** See Paralysis.

**PANARITIUM**—Foul in the Foot of the Ox.—Purgatives; long-continued poultices; astringents; the diseased foot to be kept dry; blisters. See Paronychia.

**PARALYSIS.**—Aloes; arnica, 197; valeriana; cantharides, 51; ether; rhus toxicodendron; nux vomica, 195; strychnia, 195 a; cold ablution; electricity. *Local Applications*—Tartar emetic ointment; blisters; croton oil; mustard; friction; setons; actual cautery; moxa.

**PARAPHIMOSIS.**—Warm fomentations; solution of belladonna extract or tobacco infusion in fomentations; incision of prepuce; astringent injection.

**PARAPLEGIA.** See Paralysis—Tabes Dorsalis.

**PARONYCHIA Equi.** See Grease.

**PARONYCHIA OVIVM CONTAGIOSA.** See Foot-rot.

**PAROTID DUOT, Fistula of.**—Closure by collodion; caustics; actual cautery.

**PAROTITIS.**—Mumps — Vives.—Blood-letting; purgatives; calomel and opium; soap liniment, 259; oleum terebinthinæ, 261, 270; blisters, 293; oleum cantharides; sedative ointment, 299. In chronic stage iodine, 307.

**PEMPHIGUS in the Ox.**—Iodide of potassium internally;

sulphur; arsenious acid. *Local Applications*—Nitrate of silver solution; bichloride of mercury.

PENIS, (Edema of.—Scarification; acupuncture.

PERICARDITIS.—Bleeding; aloes; calomel; tartar emetic, 69; belladonna, 77; blisters; clysters.

PERIOSTITIS.—Purgatives; warm fomentations; scarification; blisters; soap liniment.

PERITONÆUM, Dropsy of. See Ascites—Dropsy.

PERITONITIS, Acute.—Blood-letting; clysters; calomel; opium; nitre; hot rugs applied over abdominal surface; mustard poultice with strong ammonia.

PEST. See Typhus Contagiosus Boum.

PETECHIAL FEVER. See Typhus.

PHARYNGITIS. See Angina.—Astringent electuary, 216, 218; opium, 215; camphor, 217; nitrate of silver applied locally; blisters to the parotideal region.

PHIMOSIS.—Washing prepuce; hot fomentations; poultices; solution of belladonna; incision of prepuce; astringent and detergent lotions; purgatives, etc.

PHLEBITIS. See Thrombus.—At first apply cold water; place the part where the vein is inflamed at rest; apply blister of cantharides to skin; use escharotics to wound produced in blood-letting. Rey recommends excision of the vein, and others have passed setons through suppurating veins.

**PHLEGMON.** See Erysipelas.

**PHRENITIS**—Inflammation of the Brain.—Blood-letting; active purgatives; clysters; cold applications to the head, 279, 280; pounded ice and salt in a bag over forehead; blisters to neck and chest; calomel; nitre and tartar emetic, 30; nitre and digitalis, 37.

**PETHIRIASIS** in Pig.\*—Internally, black sulphuret of mercury, with chloride of sodium and gentian. Externally, an arsenical wash.

**PHTHISIS PULMONALIS VERMINALIS**—*Strongylus Filaria* in Bronchia of Calves and Lambs.—Internally, oleum terebinthinæ; camphor; lime water, 143. Inhalation of ether vapour; chlorine.

**PHTHISIS TUBERCULOSA**, especially in Milch Cows.—Attempt to diminish milk secretion by arnica; conium maculatum; animals should have sufficient exercise; nutritious diet; ferruginous tonics; arsenic; iodine. It is generally incurable.

**PHYSOMETRA**—Uterine Tympany.—Continued administration of savin; astringents.

**PILES.** See Anthrax Hæmorrhoidalis.—Piles in dog are to be overcome by light and nourishing diet; purgatives; camphor and mercurial ointment, 301.

**PITYRIASIS** or Furfuraceous Herpes.—Cleanse skin with

\* Described by Viborg as occurring in states of great debility, when the skin becomes covered with boils and ulcers, and lice generate rapidly on the surface.



soap and water; apply lead ointment; tar and sulphur, 297. Internally, tartar emetic; arsenic.

**PLEURITIS**—Pleurisy.—Blood-letting; mustard poultice to chest; friction with mustard and ammonia; turpentine liniment rubbed over the extremities; blisters; purgatives; calomel and opium to salivate; salines, 82, 203, 212, 214; tartar emetic, 69, 86; febrifuge draughts, 132.

**PLEURO-PNEUMONIA.** See Pleuritis and Pneumonia.—In the epizootic pleuro-pneumonia of the ox in premonitory stage, laxatives; setons in dewlap; cold ablution; and mineral acids, 185. When the disease is first developed, apply blisters to the chest; give calomel and potassio-tartrate of antimony; nitre. Sedatives—tincture of aconite, 127. Tonics—sulphuric acid; peroxide of iron; peroxide of manganese, 189; cinchona. Stimulants—carbonate of ammonia; creosote; nitric ether and rhubarb, 186.

**PLICA POLONICA**\*—Polish Ringworm.—Improved diet; tonic medicines. Locally, oil, and careful cleaning with soap and water.

**PNEUMONIA.**—Blood-letting; mustard poultice; blisters; hot bath to dog; vapour bath; hot rugs to surface of body. Internally, laxatives, 41, 43, 64; calomel, 86, 203, 204, 207; sulphate of soda, 114, 124; nitre, 82, 144; aconite, 232; hydrochlorate of ammonia, 85; febrifuge draughts, 132, 138; guaiacum, 202; borate of soda, 209; oxysulphuret of antimony, 213; tartar emetic, 69;

\* This disease is rarely observed in Britain. I have seen it in the mule in Italy, in the dog in Scotland; and there is a stuffed cat in the Hunterian Museum in London, the hairs of which are thus affected.

acetate of lead and digitalis, 223 ; belladonna, 235 ; James' and Dover's powders, 236.

**POLL-EVIL.** See *Fistula*.—Free incisions to expose fistulous tracks ; simple water dressing ; sulphate of zinc lotion. In intractable sinuses use injection of bichloride of mercury, and if necessary excision of a portion of ligamentum nuchæ.

**POLYPUS.**—Removal by ligature ; torsion or excision ; caustics ; actual cautery. I have recently had occasion to remove a large bony tumour from the nose by the aid of the saw and gouge.

**POLYSARCIA.**—When the fat in the body is excessive, laxatives and diuretics must be prescribed, with exercise and moderate diet.

**PORRIGO**—A Form of Ringworm over the Face of the Horse.—Alteratives ; arsenic ; sulphate of zinc lotion ; tar ointment, 297 ; ointment of the iodide of sulphur ; citrine ointment.

**PROCTALGIA.**—Pain about the anus without inflammation may be relieved by purgatives ; warm clysters ; anodyne suppository ; unguentum conii, 299 ; camphor and elder ointment, 301.

**PROCTORRHŒA.**—If fæces are covered with blood, the rectum may be examined for local cause of hæmorrhage. It is a symptom of blood disease ; but if the hæmorrhage be local, cold water clysters and astringent injections suffice to relieve the patient.

**PROLAPSUS ANI.** See *Anus*.

**PROSTATITIS**.—Inflammation of Prostate and subsequent induration, most frequent in dogs.—Acute symptoms soon subside, and difficulty in voiding fæces and urine may be manifested. In acute stage use the hot bath, cupping the perinæum, and other antiphlogistic measures. When there is induration of prostate, clysters may prove useful, and the occasional evacuation of the bladder with a catheter.

**PRURIGO**.—Excessive itching with a peculiar eruption is relieved by warm bath; alkaline lotion, 267; soap liniment used with friction; glycerine; lotion of acetate of ammonia; vinegar; weak hydrocyanic acid; solution of corrosive sublimate or nitrate of silver; iodine ointment; tincture of iodine; tar or creosote ointment.

**PSORA**. See Scabies.

**PSORIASIS**.—Herpes Squamosus—Scaly Herpes—Mistaken for Mange.—Purgatives, salines, arsenic, and tincture of cantharides internally. Externally, use glycerine, tar ointment, 297; ointment of the iodide of sulphur.

**PTYALISM**.—Remove the cause of excessive salivation, and if it continues use astringent vegetable infusions or astringent mineral solutions as washes to the mouth. Alum and acetate of lead may be the active principles in some washes.

**PUCKERIDGE in the Ox**.—The Abscess formed at the seat of Deposit of Eggs of the Œstrus Bovis.—The cure is to squeeze out the developed larvæ, and some persons recommend injections of oil of turpentine.

**PUEPERAL FEVER**. See Parturient Fever.

**PULMONARY CONSUMPTION.** See Phthisis.

**PUMICED FOOT.**—Incurable; animals rendered serviceable by proper shoeing.

**PURPURA.\*** See Typhus.

**PURULENT INFECTION.** See Pyæmia.

**PUSTULES.**—Poultices; diacetate of lead and opium lotion; simple water dressing; nitrate of silver lotion, 272; watery solution of sulphurous acid.

**PYÆMIA.**—May be prevented by attending to health of patient, and to condition of suppurating wounds. When fully developed there are no medicines of use.

**PYELITIS.** See Nephritis.—Blood-letting; poultices to loins; warm clysters; mild purgatives; calomel; opium; mucilaginous drinks.

**PYREXIA.** See Fever.

**QUARTER EVIL.**—Black Quarter or Black Leg of Young Cattle. See Anthrax—Black Leg.

**QUINSY of Pig.** See Cynanche.

**QUITTOR.**—When the abscess is forming, a stimulating embrocation or limited blister may prevent formation of matter. Use poultices; warm fomentations. When sin-

\* I have, since I commenced lecturing on Veterinary Medicine, insisted on the term Purpura being quite misapplied to the disease so named by Veterinarians, which we shall consider under the head Typhus.

uses are formed use strong injections of sulphate of zinc, nitrate of silver, and corrosive sublimate, 326.

**RACHITIS.**—Attend to diet. Those animals that will eat potatoes in abundance may derive benefit from them. Cold ablution; exercise; cod-liver oil; tannin.

**RAMOLLISSEMENT OF THE BRAIN.** See Softening.

**RAMOLLISSEMENT OF THE LIVER.** See *Hæpatitihæa*.

**RABIES CANINA.** See Hydrophobia.

**RANULA.**—Puncture; excision.

**RECTUM, Hæmorrhage from the.** See Proctorrhœa.

**RED WATER IN COWS.**—Active purgatives; stimulants; demulcent draughts. Some practitioners have had great success by exhibiting stimulants, astringents, opium, and large quantities of linseed-tea, without purgative medicine.

**REMITTENT FEVER.** See Bilious Fever.

**RENAL DROPSY.**—In conjunction with nephritis or congestion of the kidney, we may have a dropsical state. Purgatives and counter-irritants to the loins are the most appropriate remedies.

**RETENTIO SECUNDINARUM.**—If after parturition in the mare, the membranes are retained in the womb, they must be removed with care mechanically. In the cow retention of membranes for a few days does no harm, and when necessary to remove them, the hand is introduced, and each cotyledon squeezed to insure gradual separation. Use

detergent injections of chlorinated lime. Internally, exhibit a laxative ; carbonate of potash ; infusion of savin.

**RETENTION OF URINE.**—If dependent on calculi, these must be displaced or removed. If due to inflammation of the neck of the bladder, general bleeding, hot baths, warm clysters, cupping the perinæum, and the use of sedatives per rectum may prove of service. If due to over-distention of bladder or to spasm of its neck, the catheter must be used with care, but effectually. Anodyne enemata prove useful in case of spasm of the neck of the bladder. In the female apply sedatives to the vagina.

**RHACHIALGIA**—Lumbago in Cows.—Purgatives ; warm clysters ; friction to the spine with soap liniment ; oil of turpentine or camphorated spirit ; repeated doses of nitre and tartar emetic. See Lumbago.

**RHEUMATISM, Acute.**—Bleeding ; purgatives, 40, 63, 65, 108, 113, 114, 117 ; antimony and nitre, 5, 39, 175 ; calomel, 64 ; lemon juice ; opium ; aconite ; colchicum ; sulphate of soda, 206, 212, 214. Local treatment consists in friction with soap liniment and tincture of opium ; oil of turpentine, 261, 270 ; sedative ointment, 300 ; tincture of iodine.

**RHEUMATISM, Chronic.**—Calomel and opium in some cases pushed to produce ptyalism ; purgatives as for acute rheumatism ; colchicum ; iodide of potassium ; arsenic ; turpentine ; nitrate of potash ; cod-liver oil ; guaiacum ; the warm bath. *Local Remedies*—Tincture of arnica ; camphor ; ol. terebinthinæ ; acupuncture, etc.

**RHINITIS**—Inflammation of the Nose. See Catarrh.—Steaming the nose ; astringent injections.

**RIBS, Fracture of.**—Rest until bones unite. Sometimes the pleura inflames. See Pleurisy.

**RINGWORM.** See Herpes Circinatus.

**RINGBONE.**—Blisters ; firing.

**ROARING.** See Dyspnœa.

**ROT in Sheep.** See Cachexia Aquosa.

**RUBEOLÆ in Sheep and Pig.**—Separation of healthy from the sick animals ; laxatives ; demulcent and cooling drinks ; rock salt to lick ; nitre ; tartar emetic.

**RUMEN, Distention of, by Gas ;** see Tympanitis. By Food ; see Indigestion.

**RUPTURE.** See Hernia.

**RUPTURE OF FLEXOR TENDONS.**—Break down ; place the parts at perfect rest by placing a high-heel shoe on the foot ; use bandages ; allow time for bond of union to become firm. Starch bandage may prove of great benefit. The blistering and firing so constantly resorted to effect no real good.

**SALIVATION.** See Ptyalism.

**SALLENDERS.** See Mallanders.

**SANDCRACK.**—Removal of shoe, and allowing foot to grow—this is a radical measure. Relieve heel by bar shoe taking its bearing on the frog.

**SATYRIASIS.**—Similar treatment as for Nymphomania.

**SCABIES**—Scab—Mange—Psora.—Separate healthy from diseased animals. In the horse and ox use purgatives, wash the skin with soap and water, and then apply mercurial ointment alone or in combination as in 256; tar and turpentine, 257; sulphur, 258; tar and sulphur, 297; solution bichloride of mercury; arsenic; tobacco infusion; sulphuret of potassium; iodine; iodide of sulphur. In the sheep, arsenical baths are used as preventives. The most valuable dipping mixtures are 314, 315, 316, 317. When the disease manifests itself amongst a flock of sheep the arsenical dipping mixtures may be used, or infusions of tobacco or hellebore; liniments containing mercurial ointment; solution of bichloride of mercury. In the dog, use sulphur internally; and in a liniment or ointment externally, 258, 298; mercurial ointment, 256.

**SCANTERING** or Scouring. See Diarrhœa.

**SCALDS.** See Burns and Scalds.

**SCHIRRUS** of the MAMMA.—Extirpate the tumour.

**SCHIRROUS CORD.**—Remove the fungoid growth by ligature, and treat as a common wound.

**SCORBUTUS**—Cachexia Scorbutica—Seen in Calves and Lambs, etc.—Good food; potatoes; tincture of cantharides; lemon juice; carbonate of potash; nitrate of potash. *Ulceration of the mouth in*—Decoction of oak bark; alum; chloride of lime; liquor sodæ chlorinatæ.

**SCROPHULA.**—Iodine; iodide of potassium; iodide of iron; cod-liver oil; sulphur; ferruginous tonics; tannin.

**SEA SICKNESS.** See Apoplexia Marittima.



**SEPTUM NASI**, Ulceration of.—See Glanders.—Astringent injections; nitrate silver; ointment of the nitrate of bismuth.

**SEROUS CYSTS**.—Friction externally; blisters; setons; removal.

**SEROUS MEMBRANES**, Inflammation of. See Arachnitis—Peritonitis—Pleurisy.

**SHEWT OF BLOOD**. See Splenic Apoplexy—Black Leg.

**SIDE BONES**—Ossified Lateral Cartilages.—Blistering; firing.

**SLINKING**. See Abortion.

**SMALL POX**. See Variola.

**SORE THROAT**. See Angina—Cynanche—Laryngitis.

**SORE TEATS**.—Fomentations; diacetate of lead lotion; oxyde of zinc ointment; decoction of rhatany; compound lead liniment—see note at page 303. See Mammitis.

**SPASM OF THE BOWELS**. See Colic.

**SPASM OF THE NECK OF THE BLADDER**. See Retention of Urine.

**SPAVIN**.—Blisters; deep firing; setons.

**SPEED**. See Black Leg—Quarter Ill, etc.

**SPINAL IRRITATION**.—Mustard poultices or blisters to the back; purgatives; calomel.

**SPINAL MENINGITIS.** See Myelitis.

**SPINITIS.** See Myelitis.

**SPLEEN, Enlargement of.**—Iodine; sulphate of iron.

**SPLENIC APOPLEXY** in Ox and Sheep.—Keep animals on scanty pastures; allow the free use of chloride of sodium; exhibit laxatives and nitre, also vegetable and mineral acids. When the malady has declared itself it is certainly fatal, and medicines are of no avail.

**SPLENITIS.**—Bleeding; purgatives; calomel and opium; blisters to the belly, etc.

**SPLINT.**—Subcutaneous periosteotomy; iodine ointment; ung. cantharides; setons; firing.

**SPRAINS.**—Cold fomentations; tincture of arnica, 260; linimentum terebinthinæ; lin. ammoniæ; lin. saponis; bandages.

**STAGGERS.** See Indigestion—Lead Poisoning—Phrenitis.

**STAG-EVIL.** See Tetanus.

**STERILITY—Impotence.**—Treatment as, for Anaphrodisia.

**STINGE** in the Ox.—A disease sometimes speedily fatal, attendant with swellings in different parts of the body, especially the nose. Relief must be promptly afforded by bleeding, strong purgatives, diuretics; hot fomentations to swollen parts.

**STOMACH**, Inflammation of. See Gastritis.

**STOMACH**, Rupture of.—Incurable.

**STOMANTHRAX HORDEOLUM** of Pig.—Treatment as for Glossanthrax.

**STOMATITIS APTHOSA**. See Aphthæ.

**STONE** in the Bladder. See Calculus.—Lithotomy or removal of the stone through the urethra. Lithontriptics, such as hydrochloric acid.

**STONE** in the Intestine.—Purgatives; mustard poultice or hot rugs to the surface of the abdomen; clysters; opium to check spasm of the intestine; nitric acid. See Colic.

**STONE** in the Kidneys.—Gum acacia; infusion of linseed; hydrochloric acid; nitro-muriatic acid; nitric acid.

**STONE** in the Ureters, Passage of.—Opium; blood-letting; warm water enemata; ice to the loins.

**STONE** in the Urethra, especially of Ox, above the Urethral Curve.—Excision; opium to allay irritation.

**STONE-POCK**, Horn-Pock, and Wart-Pock. See Variola Vaccinia Verrucosa, or V. Cornea.

**STRABISMUS**.\*—Purgatives; blisters or setons in the vicinity of the eye.

**STRANGLES**. See Adenitis Scrophula Equorum.—Nurse

\* Hering has observed Strabismus in a foal. It is sometimes a symptom of indigestion.

the colts, and keep up their constitutional vigour as much as possible during the course of the fever and formation and healing of abscess.

**STRANGULATION of the Intestine.**—If possible relieve the strangulation.

**STRANGULATION of the Throat.**—Treatment as for apnoea; blood-letting.

**STRANGURY.**—Warm fomentations or the warm bath; injection into the urethra of mucilage containing laudanum; mucilaginous drinks occasionally, containing camphor; opiate enema. In the female, belladonna smeared on the vagina.

**STRICTURE of the Bowels.**—Incurable. If spasmodic, see treatment for colic.

**STRICTURE of the Oesophagus.**—If spasmodic, use sedative poultices, or the hydrochlorate of morphia over a blistered surface; cold drinks. This condition is apt to exist for a short time after animals have been relieved from choking, so that we should abstain from giving food and exhibit a purgative, or exhibit linseed-oil with powdered opium several times daily. In *permanent stricture* Blair recommends passing the probang daily, or division of stricture. Neither of them is likely to be attended with benefit.

**STRICTURE of Rectum.**—Laxatives; the use of a dilator daily. In some cases division of stricture, and relief by extirpation of pressing tumours, etc. Sometimes incurable. In spasmodic stricture of rectum, use warm clysters; laxatives; enemata of belladonna; camphor and cold water. It may require the mechanical removal of excrement or any offending agent—not unfrequently met with in the dog.

STRIDULOUS LARYNGITIS. See Croup.

STRINGHALT.—Incurable.

STROKE OF THE SUN. See Meagrim.

STUPOR.—A symptom of amentia or staggers, of rabies, and of typhus.

STURDY.—Removal of hydatid from the cranium. See Hydatid.

SUPERPURGATION. See Diarrhœa.

SURFEIT. See Eczema—Mange—Scabies.

SUSPENSORY LIGAMENT, Rupture of. See Breakdown.—Rest; starch bandage; cold fomentations. If there be much thickening apply blisters, soap liniment, and tincture of iodine.

SWELLED LEGS. See Œdema.

SYMPTOMATIC FEVER. See Fever.

SYNCOPE.—The act of fainting is a symptom of loss of blood, etc. Check the hæmorrhage; keep animals in a lying posture as much as possible; dash cold water on the face and approach strong ammonia to the nostrils.

SYNOCHA. See Fever, Irritative.

SYNOVITIS. See Arthritis.

SYPHILIS. See Chancre Plague.

**TABES DORSALIS**—Louping Ill in Sheep—Prurigo Lombaire of the French authors—Hydrorachitis.—Cold ablution; injection into the cellular tissue of oil of turpentine; camphor internally, and clysters containing turpentine; setons and firing along the loins; the use of moxa or hellebore issues; creosote wash; mercurial ointment.

**TÆNIA.** See Worms.

**TAPE-WORM.** See Worms.

**TEETH, Caries of the.**—Removal of teeth when possible.

**TEETHING.**—If attended with much swelling of the gums, lance the latter and administer a purgative.

**TEETH, Irregularities of.**—In the horse it is often necessary to file the teeth, or to knock off the projecting portion of a molar by means of a chisel, or an instrument admirably adapted for the purpose, invented by Brogniez, and improved by Mr Gowing.

**TENDONS, Rupture of.** See Rupture—Breakdown.

**TENDONS, Contracted.**—In moderate cases of shortening of the flexors of the fore and hind extremities, the lengthening of the toe of the shoe, the heel being kept low, and continued exercise, suffice to straighten the limbs. In the fore-legs, in mild cases, it is sometimes found that a blister over the front of the fore-arm and knee will lead to a better nourished condition of the extensors, and cure horses in which the flexors appear abnormally shortened. In old and severe cases the tendons that appear shortened must be divided.

**TESTICLES, Inflammation of.** See Orchitis.

**TESTICLES, Cancer of.** See Cancer.—In carcinoma of the testicle it is important to castrate during the early stages of the disease.

**TETANUS—Lock Jaw—Stag Evil.**—A quiet dark place, where the animal may remain undisturbed, is the first consideration. If there be any apparent excoriations or wounds, it is important to cauterise them, or, when possible, to divide nerves proceeding to the part as in cases of punctured foot. Bleeding; drastic purgatives, 40, 63, 65, 112, 115, 119, etc.; enveloping the body in hot rugs; emetics in carnivorous and omnivorous animals, 64, 66, 67, 71, 120; nitre and camphor internally in large doses; belladonna; the prolonged use of anæsthetics. Quinine internally has proved useful. Externally, belladonna poultices; rubefacients, such as turpentine, soap liniment, mustard, etc. Active agents may be injected in moderate doses into veins, such as an infusion of white hellebore, of arnica, of tincture of assafoetida.

**TETTER, MOIST.** See Eczema.

**THICK WIND.** See Pneumonia.—When chronic it is incurable.

**THOROUGHPIN.** See Bursal Enlargements.

**THREAD-WORM—Filaria.** See Worms.

**THROAT, Sore.** See Angina.

**THROMBUS.**—Apply cold water. See Phlebitis.

**THRUSH, or Frush, in Horse's Feet.**—Relieve state of irritation of feet by proper shoeing, etc.; charcoal poultice.

tice; diacetate of lead lotion; tar, chloride of sodium on tow inserted in the cleft of the frog.

THRUSH in the Mouth. See Aphthæ.

TONGUE, Inflammation of the. See Glossitis.

TONGUE, Induration of the.—Scarify; setons in intermaxillary space; blisters; iodine and mercurial ointment.

TONSILLITIS. See Sore Throat.

TRACHEITIS in Cattle. See Croup.

TREMbles. See Milk Sickness.

TRISMUS—Lock Jaw. See Tetanus.

TUBERCULAR DISEASE. See Phthisis.

TUMOURS, Encysted.—Extirpation by fingers. Other tumours removed by caustics, actual cantery, and excision; some by the internal exhibition of iodine, and external use of iodine and mercurial ointment.

TUSSIS—Cough. See Sore Throat.

TYMPANITIS in the Horse. See Colic, Flatulent.—Aloes; enemata; liquor ammoniæ; spirit. amm. arom.; æther sulph. Recently, many successful cases of enterotomy have been recorded.

TYMPANITIS in the Ox or Sheep.—Sulphate of magnesia; linseed-oil; lime water; soap and water; solutions containing potash; liquor ammoniæ, 129; chlorate of pot-



ash, 177; chlorinated soda, 178; chlorinated lime, 180; assafetida, 122; colchicum, 179; turpentine; brandy; ether; cold ablution; the use of the hollow probang; puncturing the rumen with the trochar.

**TYPHOLEMIA.** See Carbuncular Fever and Anthrax.

**TYPHUS.**—Purgatives; diuretics; camphor; ether; ammonia; sulphate of quinine; sulphuric acid; mustard internally, 58; the hot bath; mustard, turpentine, or liniment of ammonia to the surface of the body and region of the spine.

**TYPHUS ABDOMINALIS.** See Enteric Fever.

**TYPHUS APOPLECTICUS.** See Splenic Apoplexy.

**TYPHUS CARBUNCULOSUS.** See Carbuncular Fever.

**TYPHUS CONTAGIOSUS BOVM**—Contagious Typhoid in Cattle.—Bleeding in very early stage; saline purgatives; mineral acids; ferruginous compounds; vegetable bitters, such as gentian, oak bark; decoction of cinchona; sulphate of quinine; cold ablution. Externally, the use of setons, issues, blisters, sinapisms.

**ULCERS.**—Tincture of myrrh or of aloes; tincture of cantharides. *Indolent*—Sulphate of zinc lotion; nitrate of silver, 272; nitric acid; diacetate of lead lotion, 264; ung. picis liquidæ, 297. *Irritable*—Carron oil, 273; ointment of the nitrate of mercury. *Phagædænic*—Conium and opium, 299; chlorate of potass; actual cautery; charcoal and yeast poultice; creosote. *With profuse or fetid discharge*—Catechu; tincture of the sesquichloride of iron; chlorinated lime; chlorinated soda; aqua calcis; iodine.

ULCERATION OF THE ŒSOPHAGUS in the Ox.—Seen about ten days after choking. Blisters along the throat; mash diet; frequent draughts of tepid water, followed occasionally by small quantities of linseed-oil mixed with tincture of myrrh or tincture of benzoin.

URETHRITIS. See Gonorrhœa.

URINARY DEPOSITS. See Stone.

URINARY ORGANS, Hæmorrhage from the. See Hæmaturia.

URINE. See Albuminuria—Dysuria—Incontinence of—Retention and Suppression of Urine.

URTICARIA.—Laxatives; nitre; arsenic; decoction of cinchona or quinine. *Local Applications*—Oil turpentine; soap liniment; liq. plumbi diacetatis; acetic acid.

UTERINE HÆMORRHAGE. See Flooding.

UTERUS, Inflammation of. See Metritis.

UTERUS, Prolapsus of the. Speedy return by manipulation, etc. Use alum; decoction of oak bark if necessary.

UTERUS, Rigidity of the Mouth and Neck of.—Blood-letting; belladonna; conium.

VACCINA. See Cow-pox—Variola.

VAGINA, Discharge from. — Purgatives; colchicum; astringent injections. See Leucorrhœa.

**VARICELLA BOUM.**—Nitre and common salt in water; low diet.

**VARICELLA OVIVM.**—Laxatives; nitre.

**VARIX.**—Varicose veins are rare in animals, and quite beyond medical interference.

**VARIOLA OVINA.**—Give the sheep plenty of space and dry straw to lay on, good and easily digested food; during the inflammatory stage, exhibit nitre, sulphate of soda; if the fever be of a typhoid type, give arnica, camphor, ammonia, sulphuric acid; externally, apply vinegar.

**VARIOLA VACCINA.**—Attendance to diet and state of the bowels. Ulcers in teats must be attended to. Teat catheters may be used, and all means resorted to, to prevent inflammation of the mamma. There are various forms of false cow-pox, such as the *secondary* or *miliary*, the *warty*, the *wind-pox*, or *variola vaccina bullosa* of Hering. These forms are innocent, and need no treatment.

**VEINS, Inflammation of.** See Phlebitis.

**VENEMOUS BITES.**—Internally, wine, ammonia; externally, suction, caustics, solution of ammonia, oil.

**VENTRICLES OF THE BRAIN**—Dropsy. See Amentia—Hydrocephalus—Phrenitis.

**VENTRICLES OF HEART**—Hypertrophy. See Heart.

**VOMITING.**—Creosote; hydrocyanic acid, 199; opium and ether, 200; carbonate of soda, 238; carbonate of magnesia; tartaric acid; nux vomica, 244.

**WARBLES in the Horse.**—In early stage, apply diacetate of lead lotion and vinegar, hot fomentations, poultices, incision, caustic lotions and injections. The tumour is apt to harden and form a *siffast* and indurated cicatrix, which is prevented by passing a little seton through the abscess at first. In the ox, warbles are tumours containing the larvæ of the *cæstrus bovis*, which are displaced by squeezing, and if in great abundance the tumours must be lanced, and a few drops of oil of turpentine injected into them.

**WARTS.**—The ordinary warts in the horse are encysted, and the result of accumulation of sebaceous matter; these are readily removed by the fingers squeezing the mass out of its cyst. Other warty excrescences are treated by caustics, acetic acid, nitric acid, nitrate of silver. The actual cautery, when applicable, is far the best.

**WATER IN THE HEAD.** See Hydrocephalus.

**WATER FARCY.** See Angeioleucitis.

**WINDGALLS.**—Firm pressure by bandage; proper shoeing without caustics; blisters; firing. Injection of tincture of iodine, taking every precaution by making a subcutaneous opening in the bursa.

**WITHERS, Fistula of.** See Fistula.

**WOMB, Diseases of.** See Uterus.

**WORMS.**—*First Order*—Round Worms (Nematoidea).

I. Tricocephalus.—*a.* Tr. Affinis, in large intestine of sheep, goat, and sometimes in the ox. *b.* Tr. Depressusculus, in cæcum of dog. *c.* Tr. Crenatus, in

large intestine of pig. Rarely noticed until after death. Use drastic purgatives.

II. *Filaria*—Thread-Worms.—*a. F. Lacrymalis*. In the lacrymal glands and sac of ox and horse, and between eye-lids and eye-balls. *b. F. Papillosa* or warty thread-worm, beneath pleura and peritonæum in horse, ass, and mule; in the crystalline lens and anterior chamber of the eye, or beneath the arachnoid, in horse and ox. Animals affected with the *filaria lacrymalis* should have highly nutritious diet, tonics, such as mineral acids and iron. Locally, use astringent collyria, 284. The *F. papillosa* is rarely suspected during life. If in the eye, the anterior chamber may be punctured for its evacuation.

III. *Spiroptera*.—*a. Sp. Megastoma*, in the hypertrophied coats at the cardiac end of horse's stomach. *b. Sp. Strongylina*, in the stomach of pig. *c. Sp. Sanguinolenta*, in the stomach of dog. No symptoms of their existence during life.

#### IV. *Strongylus*.

A. *Strongyli* with bent head—*Dochmius* of *Dugardin*.—*a. Str. Tubæformis*, from duodenum of cat. *b. Str. Trigonocephalus*, small intestine of dog, sometimes in the stomach, and even in the heart. *c. Str. Hypostomus*, from the large and small intestine of sheep and goat. The *str. trigonocephalus* may abound in the dog, and any of these worms are expelled by giving the animal an infusion of Indian pink (*Spigelia Myrlandica*), or half-drachm doses of stinking hellebore, and afterwards purgatives.

B. *Strongyli* with horny mouth—*Sclerostomum* of *Rudolphi*.—*d. Str. Armatus*, met with in the aneurism of anterior mesenteric artery, in abdominal aorta and vena cava, in cæcum and colon, and some-

times in the duodenum, pancreas, and in the tunica vaginalis of horse, ass, and mule. No treatment can be applied for the removal of these worms. *e.* Str. Tetracanthus, in the cæcum and colon of horse. *f.* Str. Dentatus, large and small intestine.

- C. Strongyli, properly so called.—*g.* Str. Radiatus, in the small intestine of the ox. *h.* Str. Venulosus, in the small intestine of the goat. *i.* Str. Filaria, in the respiratory passages, and imbedded in the tissue of the lungs of goats and sheep. *j.* Str. Micrurus, from the respiratory passages of calf, horse, and rarely, also, in the ass. *k.* Str. Paradoxus, met with in the bronchia of the pig. *l.* Str. Contortus, from the rennet of the sheep. *m.* Str. Filicollis, from the small intestine of the sheep. Of the strongyli, properly so-called, those that inhabit the respiratory passages are the most dangerous, but against which treatment is of some use. Use lime water, 143; turpentine; inhalation of smoke from burning animal matter, such as leather, horn, hairs, etc., of tobacco smoke, of chlorine, etc. Tonics, mineral and vegetable. Tincture of savin.
- D. Eustrongylus.—*n.* Str. Gigas, from the pelvis of the kidney of horse, ox, and dog. Give turpentine; tannin.

#### V. Oxyuris.

Oxyuris Curvula, from the cæcum of the horse.—This single species of oxyuris is only discovered on careful examination of the contents of the cæcum of the horse after death. I have seen them very abundant, but never giving rise to symptoms of derangement during a horse's lifetime.

#### VI. Ascaris.

- A. Ascarides without lateral alæ to their head.—*a.* Asc. Lumbricoides, from the small intestine of ox

and pig. *b. Asc. Megalocephala*, from the small intestine, and sometimes seen in the stomach and large intestine, of horse and ass.

*B. Ascarides* with membranous folds to the head.—*c. Asc. Mystax*, from the small intestine of the cat (very common). *d. Asc. Marginata*, from the small intestine of the dog; also very frequently seen.

*Ascarides* accumulate in large quantities in the intestines of the horse. They are displaced by aloetic purgatives; by purgative doses of calomel, 9; by tartar emetic, given daily for some time, and followed by a brisk cathartic, 11; iron filings, 10; tin filings, 12; assafoetida, 13; wormwood and calomel, 15; oil of turpentine, 111; cayenne pepper and aloes, etc. Mr Hunting informs me that, when horses suffer from *ascarides*, he exhibits 3 drachms of sulphate of iron, 12 grains of arsenic, and 5 grains of cantharides mixed, daily for six days, and then administers 6 drachms of aloes. After a few days intermission the course of treatment may be repeated if necessary.

In the dog the sesquichloride of iron is found useful, 190; a small tea-spoonful of pounded glass in butter; half-drachm doses of dried powder of stinking hellebore; Indian pink (*Spigelia Myrlandica*) half an ounce, infused in a pint of boiling water, and given alone or in broth, and next morning a dose of castor oil; \* *santonicum*; *areca nut*.

#### VII. *Onchocerca*.

*Onch. Reticulata*, in the flexor metacarpi, and in the coats of the metacarpal artery.

#### *Second Order*.—Hooked Worms—*Acanthocephali*.

*Echinorhynchus*.—*a. Echin. Gigas*, from the small intestine of the pig. Sulphate of iron or copper; about 1 ounce of tin filings in decoction of worm-

\* See *The Greyhound*, by Stonehenge, pages 139, 140.

wood or tansy, with a little salt, repeated for three or four days, and then purgatives.

*Third Order.*—Sucking Worms—Trematoda.

A. Distomum.—*a.* Dist. Hepaticum, the common fluke, from the biliary ducts of the horse and ass, and from the same ducts and gall-bladder of ox, sheep, and goat. *b.* Dist. Lanceolatum, from the biliary ducts and gall-bladder of ox, sheep, goat, and pig. The flukes abound in animals on flat and marshy districts. See Cachexia Aquosa. Ferruginous tonics, common salt, nutritious food, and highland pasture, constitute the preventatives and means of cure.

B. Amphistomum.—*c.* Amph. Conicum, from the rumen of ox, sheep, and goat. *d.* Amph. Truncatum, from the bile ducts and gall-bladder of the cat.

C. Hemistomum.—*e.* Hemist. Alatum, from the small intestine of dog.

D. Acanthotheca—Pentastomum. *f.* Pentast. Tænioides, from the frontal sinuses of horse, mule, dog, and sheep. *g.* Pentast. Denticulatum, from the liver and diseased mesenteric glands of goat and ox; from the liver of the cat. When the Pentastomum tænioides infests the frontal sinuses it may be requisite to trephine, and inject astringent solution. Inhalations of chlorine and of tobacco may serve to cause the worm to become detached.

*Fourth Order.*—Cysto-cestoid Worms—Bladder and Tape Worms.\*

I. Tænia—Tape-worm.—*a.* Tænia Expansa, from

\* Siebold, Kuchenmeister, and other German zoologists, have studied the development of bladder-worms from the eggs of tape-



the small intestine of ox and sheep, especially lambs. *b.* *T. Denticulata*, from the intestine of the ox. *c.* *T. Plicata*, from the small intestine of the horse. *d.* *T. Mamillana*, from the small intestine of horse. *e.* *T. Perfoliata*, from the same. Of the five last-mentioned species the corresponding bladder-worms are unknown. *f.* *T. Serrata* inhabits the small intestine of the dog. This species is considered the same as *T. marginata*, met with in the intestine of the wolf, and the corresponding bladder-worms are the *Cœnurus cerebralis* of the sheep, and the narrow-necked bladder-worm of ruminants and swine—*Cysticercus tenuicollis*. *g.* *T. Crassicollis*, from the small intestine of the cat, the corresponding hydatid being the *Cysticercus fasciolaris*, met with in the livers of rats and mice. *h.* *T. Cucumerina*, which is met with in the small intestine of the dog. *i.* *T. Elliptica*, from the small intestine of the cat. The bladder forms corresponding to the two last-mentioned tape-worms are unknown. *j.* *Cysticercus Cellulosæ*, from the cellular tissue, muscles, and serous membranes of the pig, dog, and other animals. It is the hydatid form of *Tænia solium* of man. It is, perhaps, also a form of the *T. serrata* of the dog, showing that the development of these worms is rather different. *k.* *Cysticercus Fistularis*, from the peritonæum of the horse; its tape form is unknown. *l.* *Echinococcus Polymorphus* or *Veterinorum*, from the lungs, liver, spleen, kidneys, and heart of ox, sheep, pig, goat, and other animals. If *Echinococchi* be swal-

worms, and the addition to the head and body of the bladder-worm of the rings of tape-worms under favourable circumstances; thus establishing that they are only two forms of one group of worms.

lowed by dogs, it has been proved by Von Siebold that they develop into a form of tape-worm with only three serrations.

The dog is the only animal generally treated for tape-worm; the ox is sometimes tormented, and attempts are made to relieve him; but the horse and other animals are more generally attended to when their intestines and other organs are infested with round worms of different kinds. The remedies for tape-worm are kousso; \* oil of turpentine; root of the male fern; areca nut.

II. *Dibothrium*.—*a. Dibothrium Decipiens*, from the small intestine of the cat. Its corresponding tape-worm is unknown.

WOUNDS.—Depilatory powder, 104; collodion or common glue and rag, to form a firm bond of union between lips; sutures; poultices; spongio-piline; cold water; astringent dressings, either in the form of dry powder or lotions. If attended with fetid discharge, apply disinfectants. For Poisoned Wounds, see Contagious Animal Poisons, page 209.

YELLOWS. See Jaundice.

\* Stonehenge recommends from 4 drachms to 1 ounce of kousso to be infused in half a pint of boiling water; the whole, when cold, should be mixed with a table-spoonful of lemon juice, and given at night to a dog previously starved twenty-four hours, and a dose of oil administered in the morning.

THE END.

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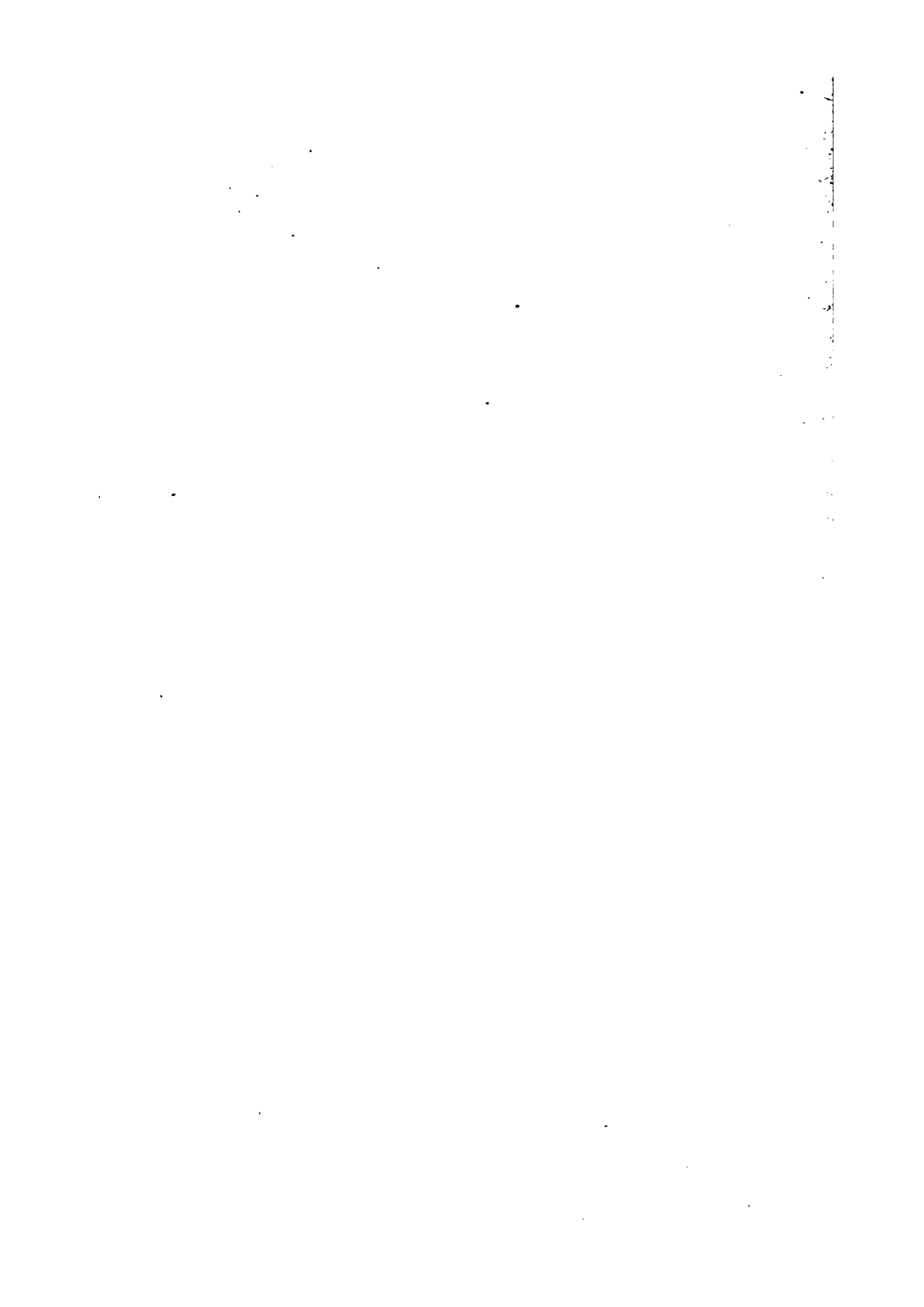
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